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MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

EDITED BY

PROF. G. F. STOUT,

WITH THE CO-OPERATION OF PROFESSOR E. B. TITCHENER, AMERICAN EDITORIAL REPRESENTATIVE, AND OF PROFESSOR WARD, PROFESSOR PRINGLE-PATTISON, DAVID MORRISON, M.A., AND OTHER MEMBERS OF AN ADVISORY COMMITTEE.

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A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—A SKETCH OF THE PHILOSOPHY OF RELIGION, WITH ILLUSTRATIONS OF CRITICAL MONISM.

BY DOUGLAS CLYDE MACINTOSH.

PHILOSOPHY differs from science as wisdom differs from information. Science is systematised information. In its most characteristic form it is description of fact. Abstract sciences, *e.g.*, mathematics, furnish information as to what *would be*, if certain assumptions were according to fact. Normative sciences, *e.g.*, economics and ethics, furnish information as to what *must be*, if certain ends are to be attained. Fundamentally, all is information, description.

Philosophy, as we have indicated, is more than science, as wisdom is more than information. But a sound philosophy will make use of science, just as it is the part of wisdom to make use of available and relevant information. And yet, however the sciences may develop, there will always be a place for wisdom in the estimation of ideals and values, and in the attempt to fathom the nature of man and of the universe.

All philosophy, then, may be divided into two main parts, criticism, or the philosophy of values, and metaphysics, or the philosophy of reality. Some of the branches of critical philosophy are relatively simple, dealing, as they do, with the nature of ideals. Philosophical logic, for example, deals with the nature of truth; philosophical ethics, with the nature of moral goodness, and philosophical economics with the nature of wealth, or economic well-being. Other branches,

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however, are relatively complex, inasmuch as they deal with selected phases of human life, *e.g.*, the philosophy of history, the philosophy of the State, the philosophy of religion, and the philosophy of knowledge. This last makes use of science and of certain elements of metaphysics, but in the main it is a criticism of the knowledge-value of human perception and thought.

Until recently what has been called the philosophy of religion has been mainly metaphysical. It has been *religion's philosophy*—the religious man's theory of reality. More recently the term has been used to denote a branch of philosophical criticism; it has been *philosophy about religion*.

Now all thinkers, whether believing or sceptical from the religious point of view, can agree on the possibility of the philosophy of religion as a branch of critical philosophy. Such a discipline would undertake to consider as critically as possible the question of the value of religion for life, including its value for knowledge. The question as to whether the philosophy of religion ought to include a metaphysical part, embodying religion's philosophy of reality, will be answered according to the outcome of that part of the critical philosophy of religion which deals with the value of religion for knowledge of reality. If the outcome is negative, unfavourable to the validity of "religious knowledge," the metaphysical part will be omitted (as in Höffding's *Philosophy of Religion*). But if the outcome of the philosophy of religious knowledge should turn out to be positively favourable to religion, upholding the view that, in religious experience and thought at their best there are both awareness of a divine Factor in reality and, as a consequence of this, essentially true judgments as to that Factor, then the philosophy of religion will naturally and very properly go on to develop and include a metaphysical part. In this case we would suggest the following division of the subject: I. The Critical Philosophy of Religion: (1) Introductory: The Empirical Basis; (2) The Philosophical Construction. II. The Metaphysical Philosophy of Religion: (1) Introductory: The Empirical Basis; (2) The Philosophical Construction.

This second alternative, favourable to the development of a metaphysical part, being the position to be defended here, we shall proceed forthwith to indicate in outline the content of

PART I. THE CRITICAL PHILOSOPHY OF RELIGION.

The empirical basis for the critical philosophy of religion is to be found mainly in the history, psychology, and sociology

of religion. Here the chief matter of concern is the essential nature of religion, with special consideration of the concept of progress in the development of religion.

The question of the essence of religion presupposes a definition of essence. The essence—strictly speaking, the *good* essence—of any historical or experiential *quantum* is that in the facts which it is essential to retain in order to realise some valid ideal—provided this selected element can retain its vitality when separated from all which it is essential, for the same purpose to exclude. Roughly speaking, it is the greatest common measure of the actual and the ideal. The *bad* essence of anything, on the other hand, is that which it is essential to exclude, if the ideal is to be realised. Whatever has a good essence is essentially good. Whatever has a bad essence is not necessarily essentially bad, but whatever has no good essence and has a bad essence is essentially bad.[1]

In dealing with the question of the essence of religion, it may be well to distinguish between what we may call the quintessence of religion (that in historical and experiential religion which it is *most essential* to retain), and that which, in addition to this, may be considered essential. It may be suggested that the quintessence of religion is the element of aspiration, or *devotion to a divine Ideal—i.e.*, to an ideal worthy of man's supreme devotion, worth living for, and, if need be, worth dying for. All but extreme pessimists will agree that this is a good essence. But the essence of religion also includes—whether it be considered a good or a bad essence—*dependence upon a divine Being—i.e.*, a being worthy of man's absolute dependence. Devotion to an ideal regarded as divine, we may call *fundamental religion*. Dependence upon a being regarded as divine, we may call *experimental religion*.[2]

The main problems of the philosophy of religion centre about experimental religion, since there is little room for question as to the value and validity of religion as devotion

[1] For a fuller discussion of the concept of essence, see my article in the *Harvard Theological Review* for January, 1914, entitled, "What is the Christian Religion?"

[2] The highest conceivable unity of fundamental and experimental religion would be that in which the divine Ideal was found in the divine Being. This would not necessarily mean that the ideal was realised in such a way that it could no longer be an ideal. The reality of the ideal might be the reality of a divine *Will*, having as its content the highest possible good, but the content of that Will might be not yet fully realised. Whether or not such a unification of fundamental and experimental religion is rationally possible, belongs to the metaphysical part of the philosophy of religion.

to the absolute Ideal. And so, before passing from this question of essence, let us consider what further, in addition to the essence *of* religion, may be regarded as essential *to* religion, especially to experimental religion. (The distinction is a valid one, as may be seen from the parallel instance of food, which, while not the essence of physical life, is essential to it.)

It may be said that it is essential to the continued existence of experimental religion, that there should be something in experience which can be taken as "revelation," *i.e.*, as giving evidence of the reality of the divine Being. An obvious form for this revelation to take would be the experience of deliverance from some supreme obstacle, or evil, through dependence upon the divine Being. This deliverance from evil through religious dependence, experimental religion itself has called "salvation".[1] If no such experience can be counted upon in response to any discoverable form of religious dependence, it does not seem possible that experimental religion should permanently survive.

But in addition to what is essential for the continued *being* of religion, we may ask, What further is essential to its *well-being?* Here several elements may be enumerated. First, social life in general, with its influence on the development of ideals and interests for the sake of which man is impelled to be experimentally religious. Again, and more particularly, there is the social life of the religious community, with its religious experience to be shared by the individual, and its religious history and traditions. Moreover, the well-being of religion undoubtedly calls for the expression of religious thought (in a creed),[2] of religious feeling (in a form of worship), and of the active impulses fostered by religion (in conduct which is felt to have the sanction of religion). And it would

[1] The Object of religious dependence does not normally remain to the religious subject a mere Means. There is a natural psychological transition from the successful use of an object as means to the gratified contemplation of it as end. The divine Being tends, as the consequence of man's successful religious dependence, to become an Object of contemplation, and so—as in worship, with its more or less mystical developments —an End.

[2] The function of the thought-element in religion has been interpreted by the rationalists as simply the anticipation, in terms of the imagination, of the main contents of a true philosophy; by the symbolists and subjectivists as simply the symbolic expression of religious feeling, and in current pragmatism as simply the functioning in a comprehensive way as instruments of adjustment to the situation with which the individual or the group is confronted. As a matter of fact religious ideas are related to cognition, feeling, and action, and discharge at once all three of the mentioned functions.

seem the part of wisdom for the religious individual, in freely choosing his creed, ritual, and rules of conduct, to consider seriously, in addition to his individual needs and experiences, the possible requirements or contributions of the social life in general and of the vitally religious community in particular.

Finally, it would seem essential for the most effective preservation and propagation of experimental religion, that there should be an institution, a social religious organisation, to devote itself particularly to these ends. The church is ostensibly such an institution, and the true—or truest—church is that one which most effectively preserves and propagates the best form of experimental religion. And that is the true form of church government which, in any given situation, is, religiously considered, the most efficient.[1]

But if we are to have an adequate empirical basis for estimating the value of religion, we must see it, not only in its general nature, but in the main lines of its development, and especially in such progress toward a definite goal as its historical and contemporary forms may manifest. The question of the genesis of experimental religion, or, in other words, of its differentiation from pre-religious or only quasi-religious life, has been much discussed; but with the definition of its essence here adopted, its origin as a life adjustment definitely different from other experimental relations will naturally be sought in some crisis, some situation in which other adjustments are felt to be inadequate or even futile, and which calls for some form of turning to and depending upon the Being or Power felt to be supreme and the ultimate court of appeal.

But not only has experimental religion come to be clearly differentiated from other phases of human life; within the developing life of religion itself, many differentiations have taken place. The primary or most general internal differentiation of religion has been into regional groups of somewhat similar religions. Asia has been the cradle of practically all the great historic religions, and what we have called the primary differentiation of religions is associated with three great divisions of Asia—the East (China and Japan), the South (India), and the West (Persia, Mesopotamia, Arabia, Syria, and Palestine).[2] The indigenous religions of the East

[1] Similarly, such questions as those of church union, and the conditions of church membership, should be considered from the point of view of the interest in religious efficiency. The *religious* efficiency of a church is to be sharply distinguished, of course, from its efficiency as a political or special-class instrument.

[2] The closely bordering countries of Egypt and Greece may be included in what we have called the Western region.

are, in the main, law-religions, practical, this-worldly, ethical. The religions of the South are redemption-religions, mystical, other-worldly, philosophical. The religions of the West have tended to combine both sets of qualities.

The secondary differentiation of religions is into various religions which, for the most part, bear different historic names. They are in the main either national religions or religions which have grown up around some personal "founder". In the latter case, the God-idea tends to reflect the personal characteristics of the founder.

The tertiary differentiation of religions is the subdivision into sects. The general distinction between a religion and a sect, historically speaking, is that religions differ as to the "revelation" they regard as authoritative, while sects differ simply in their interpretation of that revelation, although they differ (or have differed) sharply enough to have found it desirable to form different fellowships.

The differentiations of religion have been occasioned by more or less accidental circumstances, such as geographical location (with consequences for climate, occupation, etc.) and individual leadership. But in the development of religion there have been other factors at work which are more universal in human nature and which have been tending, especially in recent times, toward unification. Speaking broadly, these factors are the common needs and interests of developing humanity, experience and observation of the consequences of certain ways of acting, especially in experimental religion, and rational reflexion upon the facts of experience. These factors tend to refine and spiritualise religion. More particularly, they tend to make experimental religion more rational and more moral.[1] But besides these two criteria (development in rationality and development in morality), religious progress involves a third, *viz.*, conservation of vitality.

[1] Experimental religion has become consciously moral when it has learned to seek moral reinforcement through dependence upon the absolute Being (interpreted as moral) for the realisation of moral ends. This is a content to which there can be no valid rational objection, and so, as development in rationality and scientific outlook discredits superstitions, beliefs, and practices, experimental religion must develop in morality, or die. Among critical thinkers experimental religion is ultimately either rationalised out of existence, or else it tends to be rationalised into its final and universally acceptable form—which form must be moral. It should not be overlooked, however, that many times the religious relationship has been entered into for other than consciously moral ends, and that even here the result tends to be to promote moral values, rather than the other-than-moral ends directly. This fact tends, especially among the thoughtful, to make experimental religion *primarily* moral in its ends and aims.

Religion at its best, then, whatever else it may be, must be religion in its most vital, moral, and rational form.

Having arrived at these conceptions of (1) the essence of religion, and (2) religious progress and religion at its best, we may now turn to the critical philosophy of religion proper. What is the *value* of religion?

There is not much dispute as to the value of fundamental religion—devotion to the absolute Ideal. Its value for life is obvious. So ought to be its value for knowledge—at least for knowledge *of values*.

There is more difference of opinion, and hence more call for philosophical criticism, with reference to the value of experimental religion. A critical philosophy of religion must examine the value of experimental religion (1) as an end, and (2) as a means (*a*) to life, and (*b*) to knowledge *of reality*.

The primary and only adequate basis for the appreciation of the value of experimental religion *as an end* is the religious experience in its immediacy.

The discussion of the value of experimental religion *as a means* toward other ends in life will include a consideration of its effectiveness for promoting, directly or indirectly, the moral, social, æsthetic, hygienic, economic, and political well-being of humanity. Here the basis for judgment must be empirical information—historical, psychological, and sociological.[1]

In all of these estimates of value, exaggeration must be guarded against. Sceptical prejudice tends to deny to experimental religion any positive value, while mystical religion tends so to absolutise the value of religion as to deny ultimate value to anything else. A more critical view will recognise that in historic religion, or intimately associated with it, there has been, on the one hand, much that has been unfavourable to the moral, social, æsthetic, hygienic, economic, and political well-being of mankind, and, on the other hand, much that has tended to promote these human values. In general, it may be said, the way in which experimental religion promotes the other fundamental human interests is not so much directly as by strengthening and developing the moral will of the individual, who then seeks more diligently and effectively to promote some of these other human values.[2]

But the crucial question is not so much the practical

[1] The intellectual value of religion might have been included under "values for life," but the relative importance (*for philosophy*) of the question of religious knowledge suggests the division we have adopted.

[2] Here, again, intellectual or knowledge-value might have been included.

value of this or that more or less imperfectly developed historic religion, but the question of the value of experimental religion at its best. Here the question may be raised as to whether in its most vital and spiritual (*i.e.*, moral and rational) form, it is not so valuable as to be indispensable to the highest possible well-being of the individual and of the race. In the light of available information we would express the judgment that, other things being equal, a higher degree of individual and social morality can be realised with the aid of experimental religion at its best than without it; and if this is so, such religion, if it can be shown to be intellectually tenable, must be regarded as indispensable, not only to the highest moral well-being of humanity, but also (in view of the fundamental relation of morality to other spiritual and even material values) to the highest general well-being of humanity.

The final test of the value of religion is the critical examination of the knowledge-value of its essential experiences and ideas, or, in other words, the intellectual value of religion at its best. Here we enter the field of the philosophy of religious knowledge, or religious epistemology. Now the situation with reference to the problem of religious knowledge is closely parallel to that which confronts the student of the problem of knowledge in general. We shall first of all, therefore, survey the more general field.

In general epistemology, it is found, almost all theories readily fall into one or other of three main classes, *viz.*, a dualistic doctrine and the two corresponding one-sided monisms. Thus with reference to the problem of direct, immediate, or presentative knowledge of physical objects, there are the three groups of views. Idealistic monism claims that physical objects are directly presented in perception, inasmuch as physical objects are nothing but ideas, using the term "idea" either in the psychological sense of the word (in subjective idealism) or in the logical sense (in objective idealism). Realistic monism in its extreme form claims that physical and other objects are directly presented in sense-experience, and retain all their qualities of colour, sound, and the rest, even when they are not presented to anyone. Epistemological dualism maintains that what is presented in sense-experience is a representation of the independently real object, and not the object itself.

This dualistic position is incurably agnostic. There is always room for doubt as to whether the independent object, if it exists at all, is really knowable through the appearance which is supposed to represent it.

The strength of epistemological dualism is in its hard-headed, critical common-sense, but it is weak in philosophical construction, and it leaves its task unfinished. The two one-sided monisms, on the other hand, are strong in imaginative construction, but weak in critical common-sense. They give point to the remark of William James, that this unifying or monistic tendency, with its enthusiasm for construction, "may need to be snubbed" occasionally. It tends to be unfair to facts and to well-established distinctions of ordinary human knowledge. It may be a mark of ingenuity, but it is no mark of critical common-sense, to suggest that material things are ideas, either in the sense of mere dependent contents of states of consciousness, or in the sense of general meanings or definitions. Nor is it in accord with the common-sense scientific principle called "the law of parsimony" to suppose that all the actual and possible variations of quality in sense-presentations are real independently of their relation to the perceiving subject.

Instead of any of these three sorts of theory of direct knowledge, we would suggest a view which may be called that of *critical monism*. It stands for the attempt to combine with the critical common-sense of the dualists a little more of the constructive enthusiasm of the monists. In other words, critical monism may be described in preliminary fashion—it is not a definition—as a philosophy which consciously seeks to be as monistic as it can be, while remaining as critical and as loyal to experienced fact as it ought to be. It would find the solution of the problem of immediate knowledge in the view that the physical object is a certain quantum of energy existing in certain relations independently of the perceiving subject, and that on occasion of certain subjectively produced sense-qualities and apperceptive elements, it is presented directly to the perceiving subject *in* the complex of these qualities and elements. Thus without departing from the point of view of critical common-sense or violating the conservative, scientific "principle of parsimony," agnosticism would be avoided and the problem of acquaintance, or immediate knowledge, solved.[1]

But in addition to the problem of acquaintance, or direct awareness, general epistemology must face the problem of indirect knowledge, or how to arrive at valid certainty of the truth of judgments. This involves two problems, the problem of truth and the problem of valid certainty, or proof.

[1] For a more detailed discussion of the problem of immediate knowledge and exposition of "critical monism" as its solution, see the writer's recent book, *The Problem of Knowledge* (Macmillan Company, New York, 1915, and Geo. Allen & Unwin, London, 1916), chaps. ii. to xvi.

On the problem of truth we find, as in the case of the problem of acquaintance, two extreme and one-sided monisms (in this case intellectualism and anti-intellectualism, of which latter the chief form is current pragmatism), and a corresponding extreme dualism. According to extreme intellectualism truth is the identity of predicate with subject, of the idea with the thing. But here the criticism is obvious that on this definition there can be no true judgment that means anything, for in any significant judgment there must be a distinction between the subject and the predicate. And indeed the consistent intellectualist admits that he cannot see how any human "truth" can be really true.

According to extreme pragmatism, truth is the practical value of the idea in dealing with the thing. Here, as distinguished from intellectualism, which makes truth inaccessible, truth is made too accessible. Whatever judgment served the purpose good or bad, with which it was made, would be, for him who made it and for the time being, true.

According to extreme dualism, truth is in some cases the one thing and in other cases the other, intellectualism being valid in the realm of pure reason and pragmatism in the realm of the practical reason. This simply adds to the difficulties of the one view the difficulties of the other.

Critical monism, however, in distinction from the two one-sided monisms and the dualism, would maintain that truth, or trueness, is a quality which may be predicated of judgments in which the predicate, or idea, is practically identical with the subject-matter which it represents. In other words, and more strictly, in making a judgment one is justified in regarding it as true if its predicate represents the reality judged about, sufficiently for all the purposes which ought to be considered in making the judgment; and the contradictory judgment one would be justified in regarding as untrue.

With reference to the problem of proof it may be sufficient to say that the true method is that union of rational with empirical procedure which we find in empirical science.[1]

But in the philosophy of religion our concern is not so much with the problem of knowledge in general as with the more particular problem of religious knowledge. Here we have, as in the other case, the problem of direct, immediate knowledge, or acquaintance, and the problem of indirect, mediate knowledge, or proof of the truth of judgments.

The fundamental problem of religious epistemology, the problem of religious acquaintance, is the problem as to

[1] For a more detailed discussion of both the problem of truth and the problem of proof, see the writer's *Problem of Knowledge*, chaps. xvii. to xx.

whether there ever is, in religious experience, direct awareness, or what is ordinarily called perception of the religious Object, the divine Reality ; or, in other words, whether the Divine is ever recognisably revealed within the field of human religious experience. Here again, as in general epistemology, most theories fall into one or another of three classes, two one-sided monisms and a corresponding extreme dualism.

On the one hand there is an idealistic monism with reference to the religious Object. Of this there are again as in general epistemology, two forms, subjective idealism and objective idealism. As subjective idealism in general philosophy is the result of a fallacious snap-judgment to the effect that psychology shows physical objects to be mere complexes of "ideas," in the sense of psychical contents, so subjective idealism in the philosophy of religion is the result of a fallacious snap-judgment to the effect that the psychology of religion shows the religious Object to be nothing but an idea, or complex of ideas, in the human mind ; in other words, that so far as religious experience when scientifically examined, can say, there is no God but the God-idea (*cf.* Fenerbach, and more recently, Leuba and many others). This would be a positive solution of the problem of religious knowledge, it is true ; but it would be at the cost of atheism. It would affirm the possibility of immediate knowledge of the religious object, since what it means by the religious object is a product and mere dependent content of human consciousness. But the psychology of religion no more proves the truth of subjective idealism with reference to the religious Object than psychology in general proves the truth of subjective idealism with reference to the physical object.

Objective idealism regards the object of religious experience as it does all other objects of experience, *viz.*, as a logical idea, or a complex of logical ideas, or it may be, as a complex of logical ideas with an immediate content of consciousness. Moreover, it would substitute for the God of practical, historical religious experience, the complex unity of all logical ideas, whether with or without all immediate feeling in the Absolute Idea. But this is open to two main criticisms. On the one hand, as an argument it is fallacious; it involves a snap-judgment to the effect that there is an existential identity between the object defined and its complex definition—or at most, its complete definition in combination with certain subjective impressions. On the other hand, from the point of view of practical religion, objective idealism is simply a refined, intellectual species of idolatry. It substitutes a false god, the artifact of thought, for the true God which positive experience claims to discover as an independent Reality.

At the opposite extreme from these one-sided idealistic monisms in the philosophy of religion, which involve as we have seen, either atheism or a species of idolatry, there is a one-sided realism with reference to the religious Object. Of this the best examples are to be found among the more extreme mystics. Their tendency is to ignore the large element of pure subjectivity in mystical experiences, and to affirm as objectivity valid practically all that is suggested in the mystical state. Inasmuch as the characteristically mystical experience involves a highly concentrated contemplation of the religious Object, thought of as perfectly good, there is a tendency for the consciousness of the self and of finite individuals and the physical world to disappear, for the time being; and the same thing is true of the consciousness of all sorts of evil, and of consciousness of the lapse of time. Then, under the influence of the suggestion that the mystical state is superior, from the point of view of knowledge as well as from the point of view of life, to all non-mystical states, the extreme mystic makes bold to affirm that there is but one Reality, *viz.*, God, and that physical things, finite selves, time and evil are all unreal —mere deceptive appearances in "mortal mind". Thus extreme mysticism is, in the philosophy of religion, what the more extreme forms of "the new realism" are in general philosophy, and the criticisms to be made in the two cases are much the same. In both there is dogmatism and a fantastical departure from critical common-sense. In violation of the principle of parsimony, qualities are affirmed to be independently real which there is no scientific reason to regard as more than the subjective products of subjective activity. There is no practical test which shows it to be necessary to assume their independent reality.

Distinguishing itself from both the idealistic and the realistic form of extreme monism with reference to the religious Object, there is the very common religious position of extreme dualism, according to which there is a real religious Object, or God, distinct from all ideas of God, but which never comes within the field of human experience, or direct awareness. Here again, then, naturally the tendency is to extreme agnosticism. If God is never, strictly speaking, revealed within the field of human experience, never the direct object of human awareness, how can we know what He is, or even that He is? What basis is there for the verification of our theological theories? Some dualistic philosophers of religion are frankly agnostic; but others try in one way or another to escape the logical consequences of their theory. One favourite method is to point out that even if we are shut up

to a subjective world, so far as direct experience is concerned, we can do two things with these subjective contents: we can describe them, in which case we get the sciences, or we can evaluate them, and our judgments as to religious value can be so manipulated as to give us an ostensibly objective theology. Or, according to a rather cheap and easy pragmatism, while we cannot know anything about God on a purely theoretical basis, we are justified in believing in a God of a certain sort, in view of the valuable practical results following from such a belief. Now whatever may deserve to be said concerning the merits of such a position from a practical point of view, provided it is psychologically possible, it remains clear that what it offers is not religious *knowledge*. Theoretically, it remains on the ground of agnosticism.

In distinction from all these positions in religious epistemology—from idealistic monism, the subjective variety with its atheism, and the objective variety with its species of idolatry; from the extreme realistic monism ef mysticism with its extravagant dogmatism, and from extreme dualism with its consequent agnosticism—we would advocate again what may be called a critical monism. As it is maintained, and with ample justification, in judgments of common-sense and science, that independently real physical objects are presented, revealed to, and experienced, perceived, intuited by the conscious subject in the complex of sense-qualities for which the sense-process is responsible; and as one's own self is intuited, immediately known to be present, in the complex of psychical activities (perceiving, remembering, thinking, willing, and the rest), and as these activities in turn are experienced, intuited, perceived in their characteristic complexes of psychical products (perceptual elements, memory images, thoughts, volitions), and, once again, as we become in a direct experiential and intuitive way, and not first through explicit inference, aware of life in ourselves and in other bodies, and of other consciousness or minds than our own, each in its own characteristic complex of sense-elements, so it is in the present instance. It may be maintained by the person of adequate religious experience, that the religious Object is revealed within the complex of that experience. God, defined as a dependable Power, which makes for righteousness in and through the human will in response to a certain discoverable religious attitude [1] (of concentrated attention, steady

[1] Other definitions of God may be given, such as the satisfactory Object of religious dependence, the Source of religious deliverance from evil, or a Power in the world great enough and good enough to enable the man who rightly relates himself thereto to be inwardly or spiritually prepared for whatever he may have to face, whether it be difficult duty, suffering, temptation, death, or whatever there may be after death.

dependence, ethical self-surrender, and responsiveness) is an Object of empirical intuition,[1] *i.e.*, of direct acquaintance to the man of adequate experimental religion. Not all fugitive suggestions of special developments of the religious consciousness are to be taken as valid; but, on the other hand, the God of which one has experience can no more be identified with the mere idea of God, from the point of view of practical religion, than the idea of food can be taken as food with satisfaction to the physical life.

With reference to the problem of truth in religion, the situation is quite similar to that which obtains in the more general field of knowledge. Extreme intellectualism, extreme pragmatism, extreme dualism—all of these have their representatives, and are open in the religious field to the same criticisms as apply in the more general sphere. Only, it is to be noted, the danger of making a careless and extravagant use of pragmatism is probably greater in religious apologetics than in most other fields of thought. What we would advocate, indistinction from intellectualism, current pragmatism, and dualism, is that synthesis of the partial truths of intellectualism and pragmatism which we defined, under the term "Critical Monism," in connexion with the general problem of the nature of truth.

There remains, however, as a part of the problem of religious epistemology, the problem of religious proof, or, in other words, the problem of the scientific verification of religious judgments. This leads us into the whole question of theological method. Here, as in the other fields of our investigation, prevailing points of view are classifiable into two opposite and one-sided monisms and a corresponding dualism.

On the one hand there is the point of view of extreme rationalism, seen in the so-called "speculative theology," undertaking to derive by deduction from a few universally self-evident truths, or by a dialectical process from the categories inherent in "pure reason," the main contents of a theological system, and to furnish for it at the same time an absolute proof. The constructive enthusiasm of the rationalistic theologian awakens interest and expectation at first, but in the light of criticism speculative theology proves unsatis-

[1] In advocating an empirical intuitionism in religious epistemology we do not for a moment intend to suggest an uncritical attitude toward religious intuition. On the contrary, our *critical* monism would hold that intuition, in religion as in the realm of sense, while a source of possible knowledge is not infallible. It must be taken critically. And the approved instrument for this criticism is scientific method.

factory in its religious content and far from convincing in its "proof".

On the other hand, we find a variety of theological methods, all rejecting the rationalistic procedure and exemplifying a one-sided empiricism. First, there is *mystical* theology, appealing rather uncritically to the suggestions of the mystical experience, and taking them at their face-value as legitimate elements of religious belief. Then there are a number of one-sided empirical methods which we may class together as more or less *eclectic*. Some religious thinkers simply choose such doctrines as they "like to believe," ideas that "appeal" to them, and are not concerned to apply any further test of truth. Others (*e.g.*, Schleiermacher) would correct such undue individualism by appealing to the religious feeling which is shared by a religious fellowship, making theology a systematic intellectual expression of this feeling. Others again (*e.g.*, Ritschl) would correct the undue subjectivity of such a procedure by stipulating that the shared feeling of religious value must be that which is controlled by some further objective norm. This norm, according to Ritschl, is to be found, not in metaphysics but in history. In particular, it is to be found by taking the historic figure of Jesus essentially as it was taken by the primitive church, *viz.*, as embodying the values that are to be regarded as divine. From the point of view of scientific method, all of these procedures are to be criticised as still unduly subjective and arbitrary, and thus as merely eclectic. A contemporary theologian (Troeltsch) recognises the necessity of uniting rational with empirical criteria in theology, but in his actual procedure he falls short of attaining to any real synthesis of the rational and the empirical, such as is to be found in the empirical sciences. On the basis of a philosophy of the history of religion he concludes that Christianity is the best religion, at least for our time and for the Western world, and so he undertakes to construct a system of theology which will express the Christian religious feeling, and at the same time be unobjectionable on grounds of reason. In spite of much that might be said in its favour, it is obvious that such a system remains essentially eclectic. It has not the kind of rationality that amounts to verification. Another theological procedure suggested recently (by Wobbermin) is even more conspicuously eclectic. Starting with a psychological examination of "the varieties of religious experience," he finds that religion is always interested in the question of the truth of its ideas concerning the transcendent Being which is the Object of its dependence. Hence, he claims, the theologian

who would serve religion must choose from among the various religions that one whose experiences he can share, and whose ideas consequently he can believe to be true, even prior to all practical and metaphysical arguments. So he makes his theology, like that of Schleiermacher, essentially the expression of the religious consciousness of a community.

One more one-sidedly empirical theological method must be mentioned, *viz.*, the *pragmatic*. This method has been used often enough in a very slipshod manner; but at its best its principle may be stated as follows: That theology is to be regarded as true which is practically necessary to sustain the experimental religion which is practically necessary to sustain the highest possible degree of that sort of morality which is necessary for the highest degree of human well-being. Now a carefully critical pragmatic procedure may perhaps be the best of all methods for theology, short of a truly scientific method; but it must be clear that the above principle would be very difficult to apply, and in any case it would remain essentially eclectic and lacking verification in the scientific sense of the word.

In addition to the one-sided rationalism and the different types of one-sided empiricism in theological method to which we have referred, we must notice the extreme dualism which was characteristic of the method of the older theology. Part of its content (theism, and especially the "ontological proof") it professed to derive in rationalistic fashion, by deductive argument, and the remainder ("revealed theology")—although at second-hand—from religious experience ("inspiration" and "revelation"). The logical deficiences of the older rationalistic, demonstrative theism have often enough been pointed out, and need not now be dwelt upon. On the other hand it may be remarked that when the traditionalistic theologian claimed to make theology a science, what he meant was simply a self-consistent system of doctrines, derived by scientific methods of interpretation from his more or less arbitrarily chosen authority. Of scientific method in the proper sense of the term, all traditionalistic systems of theology have been entirely innocent.

In opposition to both extreme monisms in theological method (the rationalistic and the empirical) and to the extreme dualism, what we may call again "critical monism" would undertake no mere choice between, or mere juxtaposition of, the rational and the empirical procedures, but their synthesis in a truly scientific method, *i.e.*, a method related to the discoveries of religious experience as the recognised physical and other objective sciences are related to the dis-

coveries of sense-experience. The content of such a theology would fall under four main heads, *viz.*, presuppositions, empirical data, empirical laws, and theological theory.[1] Moreover, its feasibility would vindicate the favourable verdict passed upon the value of religion at its best.

II. The Metaphysical Philosophy of Religion.

We are now ready to turn to the second division of our outline of the philosophy of religion, *viz.*, the metaphysical. Here the main content of the special "empirical basis" for the philosophical construction would be found in the scientific empirical theology to which we have referred at the close of Part I. of our discussion. We shall therefore pass immediately to the metaphysical construction proper.

William James has described metaphysics as an extraordinarily obstinate attempt to think clearly and consistently. This will serve as a definition, if we add that its subject-matter is the nature of reality in its more general aspects and as a whole.

The history of metaphysics is not very reassuring as to its future possibilities. While science has made fairly steady progress, metaphysics might almost be said to have been wandering about in a circle, like a traveller lost in a fog or in a wood. This may be because, like theology, metaphysics has been without an adequate method.

The most important types of metaphysical method before the world to-day are three. First, there is the rationalistic or speculative method, aiming to demonstrate by a deductive or a dialectical process, and with almost no reference to the facts of experience, the ultimate nature of reality in general and as a whole. However satisfactory this method may seem to be at first, a critical examination of its many and strangely differing resultant systems goes to show that it has been a failure both as to doctrinal content and as to the certainty of its "proof".[2]

A second method is that of synthesising the more general conclusions of the recognised empirical sciences, theology being, of course, excluded. This leads to results which, in so far as they are positive rather than negative, are fairly satisfactory with reference to certainty. But in doctrinal content

[1] For a detailed working-out of this projected *novum organum theologicum* the writer must refer to a work which he hopes will be published in the not very distant future under the title, *Theology as an Empirical Science.*

[2] This is put dogmatically here, because of limitations of space and time; but a partial justification of the statement may be found, I think, here and there throughout chaps. v. to ix. of *The Problem of Knowledge.*

the result is unsatisfactory, because so incomplete. Certain metaphysical questions, of the greatest practical as well as theoretical interest, it must either ignore and leave unanswered or answer with a dogmatic negative to some of the highest human hopes and aspirations.

A third metaphysical method seeks to remedy this deficiency by effecting a combination of the established results of the recognised sciences with the metaphysical doctrines which are felt to be necessarily bound up with our consciousness of values. For example, the doctrine of human free agency seems bound up with our consciousness of moral values, and the doctrine of the existence and religious sufficiency of God seems bound up with our consciousness of religious values. Now this method, if applied with duly critical care, may lead to very satisfactory results, especially with reference to doctrinal content. But with reference to certainty it will always leave something still to be desired, because of the failure of a part of its content to arrive at a completely scientific form. It remains in the end a synthesis of scientific information with a set of *postulates*.

As distinguished from the first method, which is defective in both content and certainty, as also from the second method, which is defective in content, and from the third, which is defective in certainty, we would suggest a fourth method as the true metaphysical method, and one which will ultimately prove satisfactory, we would hope, both as to content and as to certainty. This is the method of synthesising the results of the empirical sciences, theology as an empirical science being included. (In framing the synthesising theories, it may be remarked, there will probably always be ample scope for the exercise of *wisdom*, as well as opportunity for the use of *information*.)

Having thus indicated a point of view with reference to both theological and metaphysical method, we are in a position to discuss a little further, before turning to particular metaphysical problems, the mutual relations of metaphysics and theology. We shall refer on the one hand to the reaction against theology in metaphysics and to the reaction against metaphysics in theology, and on the other hand to the function of theology in metaphysics and to the function of metaphysics in theology.

Metaphysics has shown a tendency to react against theology and to include it as a foreign and vitiating element. This has been true of the main streams of philosophy from the beginning of the modern period. This reaction against theology has been intended to safeguard the true metaphysical content

and its adequate certainty. And it must be acknowledged that as against so unscientific a type of theology as that of scholasticism, whether Catholic or Protestant, the movement was largely justified. But if the reaction is against all theology, the result can only be, as it has already proved to lead to results which cannot fully satisfy the normal human consciousness. There will be deficiencies of content first of all, but also, since verification in religious experience is ruled out, deficiencies of certainty as well. However, if it is because theology has been unscientific that it has been excluded from metaphysics, perhaps when the ideal of theology as an empirical science has been realised, it will no longer seem necessary to the metaphysician to exclude the contributions of such a theology from his synthesis.

But the repugnance between metaphysics and theology has often been mutual. Theology has shown from time to time a tendency to react against metaphysics. This has been especially conspicuous in the Ritschlian movement. For the sake of conserving both the distinctly religious content of theology and its distinctly religious certainty, it has been maintained that metaphysics should be excluded from theology altogether. And no doubt there has been a large measure of justification for theology's reaction against the prevalent types of metaphysics, with their deficiencies either as to content or as to certainty or as to both. But if all metaphysics is to be excluded from theology, if the religious thinker is not to be permitted to submit the religious content and certainty of his theology to the final test involved in seeing whether or not his doctrines are compatible with the well-established results of science in other departments of investigation, doubt is sure to be suggested as to whether indeed his theology would stand such a test. Thus the so-much prized religious certainty of theology will be imperilled, and as a consequence its religious content also.[1] If, however, metaphysics should eventually come to be, as we have suggested, a synthesis of empirical sciences, theology being included, there will no longer exist any reason, of course, for the exclusion of such metaphysics from theology.

Thinking, then, of theology as an empirical science, and of metaphysics as a synthesis of the sciences, theology being included, the mutual functional relations of the two can be readily defined. Theological theory, resting upon empirical theological laws, will furnish material for metaphysical

[1] Further details on the topic of this paragraph may be found in the writer's dissertation, entitled, *The Reaction against Metaphysics in Theology*, printed (not published) in 1911.

hypotheses, as do scientific theories in general. The elements of scientific theological theory will be tested as to their compatibility with other empirically grounded elements of metaphysics, and will thus be in a position to make their due contribution to the content of metaphysics. But metaphysics will gain thereby in certainty as well, since the theological elements will come with the backing of verification in religious experience. On the other hand, theology in its turn will gain in certainty as a result of having its religiously supported theories finally confirmed by their proved compatibility with the established results of the other sciences. And not in certainty alone, but in content also, theology may expect to be enriched through its contact with metaphysics, since in this way all the more general results of the sciences will be placed at its disposal. Thus it would appear that while theology and metaphysics are bound to be mutually incompatible so long as their respective methods remain defective, when theology shall have become an empirical science, and metaphysics a wise synthesis of the well-established theories of all the empirical sciences, the two will be seen to fit into each other's needs in such a way as to be not only mutually compatible, but practically indispensable the one to the other.

We are now in a position to turn our attention to particular metaphysical problems, and in doing so we shall deal simply with those questions concerning the nature of reality which are of special interest from the point of view of the philosophy of religion. These are the problems of matter and mind (including that of body and mind), of law and freedom, of evolution and creation, of mechanism and purpose, of nature and the supernatural, of the one and the many, and of good and evil.

We shall first take up the question of the quality of being, or the problem of matter and mind. With reference to this problem almost all metaphysical theories fall into one or another of three groups, an extreme materialism, an extreme immaterialism, and an extreme dualism.

Materialistic monism is the doctrine that in its true or ultimate nature all reality is material. Sometimes what is called mind or consciousness is explained by the materialist as simply an extraordinarily fine and mobile material substance; sometimes definitely as a secretion of the brain. Sometimes again it has been declared to be simply a mode of motion of elements in the brain, or a certain form of behaviour of the nervous system. In some instances consciousness or mind has been identified with the content of that cross-

section of the physical—or, as some would say, "neutral"—realm to which the nervous system responds, either taken by itself, or together with that responsive action. Or again, in more general terms, consciousness has been said to be a mere external relation between different parts of the material world. Or the whole realm of the psychical has simply been identified with the unreal. A veiled form of materialism exists under the form of "energism," according to which matter is ultimately reducible to (physical) energy, of which the mental is also simply a variant form. The energistic account of matter may very well be true, strongly supported, as it is, by scientific investigation. But, like all forms of materialism, it is much more satisfactory in its account of matter than in its account of mind. It makes the mistake of regarding the material part of experienced reality as a fair and adequate sample of reality as a whole.

Opposed to materialism is another form of one-sided monism, *viz.*, immaterialism. This exists in several forms, *viz.*, spiritualism, idealism, and panpsychism. According to spiritualism there is but one sort of substance, *viz.*, spirit, or mind. Material objects are all explained as being either made up of embryonic spirit, or, as is more usual, as dependent appearances or ideas in a mind or minds. According to metaphysical idealism all realities, material and spiritual, are to be regarded ultimately as nothing but ideas or systems of thought. According to panpsychism some realities are made up of thought-content, and all others are made up of feeling-content, or some other sort of "mind-stuff". Now, as the antithesis of materialism, immaterialism is much more satisfactory, at least in some of its forms, in its account of the mental than in its account of matter. Under the influence of a more or less explicit desire to conserve the "spiritual" values of human life, it has tried to maintain that mental or spiritual reality is a fair sample of reality as a whole.

Both materialism and immaterialism excel in constructive enthusiasm, but they are both weak in critical common sense. Quite the opposite is true of extreme dualism. It holds that there are two absolutely different sorts of substance and two only, *viz.*, matter and mind. Except that they are both substances, existing some would admit, in time, they are regarded as having no common nature.

Now dualism is a more conservative philosophical position than the fantastical constructions of extreme monism, but it gives the impression of having failed to solve its problem. As an alternative we would suggest a more monistic view, and yet one which seems to be equally tenable, at least, from

the point of view of critical common-sense, so that it may be brought under the general caption of "critical monism". In the first place, from this point of view the sharpness of the opposition between mind and matter may be relieved somewhat by raising the question whether there may not be a third sort of reality, exhibiting characteristics which are not inherent in matter, but not possessing some of the essential characteristics of mind, *viz.*, a vital factor, or force, such as is posited and defended rather plausibly by some recent writers. But whether we adopt this vitalistic theory or not, it would seem possible to reduce the material, or physical, the spiritual, or mental, and the vital, if there be any such thing, to a common denominator. Matter, it may be maintained, is ultimately a form of energy, and when this rather obscure concept of energy is analysed, it seems possible to interpret it as the activity of some reality, with the modifications (of quality and relation) which it produces. Much the same thing may be said of the whole range of the mental, or psychical, although there must be no thought of reducing the psychical to anything physical, even to physical energy. The psychical seems to include the following factors, or elements: a subject of psychical activities; a number of sorts of creative activities, *viz.*, sensing, perceiving, remembering, imagining, conceiving, judging, reasoning, feeling, desiring, willing; the products of these activities, *viz.*, sense-elements (colours, sounds, etc.), perceptions, memory and other images, concepts, judgments, arguments, feelings of pleasure and displeasure, ideals, volitions; also, among the products of psychical activities, one which is present in all the higher manifestations of the psychical, *viz.*, that unique relation of togetherness between subject and object which, when regarded from the point of view of the subject, may be called awareness, and when regarded from the standpoint of the object, givenness; and finally, in this list of products, through the co-operation of certain co-ordinated physical activities in the body, conscious behaviour. Here again, then, in the psychical, we have, as in the physical, the activity of some reality, with the modifications (of quality and relation) which it produces. And the intermediate vital factor, if such there be, is also readily interpreted in similar activistic terms. Thus we have carried the unifying process beyond the point reached by dualism, and yet we have remained upon essentially the same common-sense basis.

There is a subordinate aspect of the problem of matter and mind, which is of very great practical as well as metaphysical interest, *viz.*, the problem of body and mind. It is not, how-

ever, like the more general problem, a question of quality, but one of relation. More particularly, it is the question of the relation of the brain (most particularly, the "gray matter") to mind, or consciousness. To this question the more materialistic answer is epiphenomenalism, according to which the brain produces the "mental" phenomena as mere by-products, which have no power to act upon the brain, or even upon each other. The answer of immaterialism, is either spiritualism, idealism, or panpsychism, according to any of which the brain and brain-events, like all things physical, are mere inert and dependent products of the all-producing immaterial entity or entities. In opposition to both of these one-sided monisms, dualism in this connexion offers as its doctrine parallelism, according to which neither brain nor mind acts upon the other, but each acts within its own series only, the relation between the two sets of events being nevertheless, however mysteriously, *as if* there were interaction between them. In distinction from all of these rather fantastic constructions, our critical monism would give its adherence to the common-sense doctrine of interactionism, according to which there is real causal activity in both directions. This view, moreover, is compatible with the fundamentals of a moral and religious outlook, since it at least leaves room for such ideas as freedom, God and immortality.

We may now turn to the problem of law and freedom, or, as some would phrase it, law and chance, or differently still, determinism and indeterminism. On the one hand extreme monism, or determinism, maintains that the reign of law is absolute, that the total predetermination of events is universal, admitting of not a single exception. This would render the human consciousness of freedom and moral obligation illusory, which illusory consciousness, as well as all acts which we call morally evil, with their undesirable consequences, would of course have to be regarded as absolutely predetermined. This course of thought, besides being open to criticism on theoretical grounds,[1] would run counter to all practical experimental religion, as well as to any serious morality.

At the opposite extreme from this one-sided monism or determinism, there might stand—although it has had few serious defenders—an extreme tychism, or indeterminism, according to which every event would have to be regarded as a matter of chance. Not only would the so-called "laws of nature," themselves be regarded as mere approximations to

[1] See E. Boutroux: *Natural Law in Science and Philosophy.*

an absolute regularity—which many of them may be—but even such orderliness as undoubtedly exists would be held to have come about as a set of habits of the universe formed by pure chance, without any predetermination whatsoever. Human conduct would, of course, be regarded as having no more than an accidental relation to either previous or subsequent character. The moral and religious implications of such a view would naturally be only negative.

A view more widely entertained than this last is the extreme dualism which would hold that while some events are absolutely law-abiding and predetermined, there are others which are wholly void of predetermining factors, matters of the purest chance. One form of this dualism is found in fatalism, which regards the end as absolutely fixed, but holds that there are humanly free acts and chance events in the intermediate stages. Another form of the doctrine affirms complete determinism everywhere save in human choices, which are regarded as absolutely free and undetermined by any previous events or conditions.

Over against these views may be set a critical monism, according to which one may maintain that some measure of freedom and some measure of predetermination may be thought of as attaching to all events that come within the range of human observation, although the degrees of predeterminedness and freeness in different events may be widely different. Even the free decisions of the human will are not to be regarded as matters of chance, but as being very largely determined by character and circumstances. Moreover, even in so far as they are free and not predetermined, they are not to be regarded as causeless, but as being determined *at the time* in and by the essentially creative voluntary attention of the subject to certain considerations which constitute the motive of the action. On the other hand even the law-abiding events of nature may be regarded as happening in accordance with certain regular or, as it were, habitual processes, such as gravitation and other forms of attraction and repulsion, which general processes or tendencies may not have been *eternally* predetermined by either blind or conscious force, but *creatively* determined, perhaps, in the distant past, whether at once or through a long process of evolution. Moreover, if vitalism should finally claim our assent, it might be maintained that the life-processes, while very largely predetermined, are to some extent determined only at the time of their occurrence. Such a view as we have outlined would leave room for the validity of both morality and religion.

We shall now turn to the question of origins, or the prob-

lem of evolution and creation. At one extreme we find a one-sided evolutionism, according to which all things have come into overt being through an unfolding or evolution of what was virtually in the pre-existing conditions, without any creative act or factor whatsoever. At the other extreme one sometimes finds upholders of a one-sided creationism, according to which God first produces individual souls by special creative fiat, and then proceeds to create, in cinematographic fashion, all the contents of their consciousness —save such, perhaps, as they themselves create, as in volition. Opposed to both of these one-sided monisms, dualism would hold that some events are special acts of creation and not at all evolutionary, while others are evolutionary, without any creative element whatever. There are different varieties of this dualism, some for instance making the origin of species creative and the origin of varieties within the species evolutionary, while others would make the origin of species evolutionary, reserving explanation by the theory of creation for such events as the first appearance of life and sentience and rational consciousness.

But over against all these views we would set, as a critical monism, a doctrine of creative evolution, according to which evolution is creative, and all creation evolutionary. Outside of the organic realm the case for present creativeness is rather problematical, but the notion seems not inconceivable. In any case, while adhering closely to science and common sense, the view is one which seems eminently favourable to the validity of the moral consciousness, and to a vitally religious interpretation of the universe.

We now come to the question of end, purpose, teleology—the problem of mechanism, or finalism. Extreme mechanism maintains that all events which take place in the physical world, including not only all vital processes but all human behaviour, are purely and without remainder mechanical movements; no purpose has any dynamic potency; there is no force, ultimately, but mechanical and (the essentially similar) chemical force—*vis a tergo:* the whole universe is a gigantic machine, and every organism neither more nor less than a machine within a machine. To begin with, this is not science, but pure dogmatism in the realm of metaphysics. It never has been, and one cannot imagine how it ever could be, scientifically verified. And, needless to show at length, it would take all validity out of morality and experimental religion, and indeed all meaning out of the whole life of the human spirit.

On the other hand, extreme finalism, in its classical form,

upholds the view that all that happens is equally the expression of an all-determining purpose. Not only in the adaptations of organisms to their environment, and in events which may be interpreted plausibly as "providential," but throughout the whole range of nature and the whole course of history, all events, good, bad, or indifferent, are the expression of one infinitely detailed and comprehensive, and eternally complete divine plan. Another form of extreme finalism is that which is characteristic of an extremely subjective pragmatism, in which it is held that everything is for the individual or for the social group what it is made to be by the purposes of that individual or that group. Both forms of extreme finalism are, from the point of view of critical common sense, highly dogmatic. Moreover, while the former leaves no room, logically, for morality, the latter leaves none for experimental religion.

In distinction from the two one-sided monisms, dualism maintains that these are mechanical events which are in no sense teleological, and purposive events which are not at all mechanical. The Designer is a comparatively late comer into the mechanical order, with the original constitution of which he has had nothing to do. This ancient and supposedly dead and buried religious theory has been resurrected and given a new lease of life in our day, in an effort to find a satisfactory solution of the problem of evil. But such a secondary Power would hardly be an adequate Object of absolute dependence, and, as has been pointed out, the would-be devotee is impelled to seek further, even if it is only for the "veiled Being" that, it is felt, must be beyond any such "finite God".

Suggestive material for a critical monism is found in the vitalism which Bergson defends in opposition to both mechanism and finalism. Apart from all exaggerations both in the content and with reference to the certainty of this doctrine, it can hardly be denied that in the processes of physical growth, regeneration, and evolution, there seems to be a factor at work which is more than mere mechanism, but concerning which we cannot say that it is in itself a consciously purposive performance.[1]

But while vitalism tends to undermine not only extreme mechanism and extreme finalism, but extreme dualism as

[1] The fact that the moral consciousness requires us to interpret human free agency in a vitalistic way lends some colour to the vitalistic hypothesis in connexion with the less developed forms of life. It, at least, meets, in large measure, the objection that vitalism violates the principle of parsimony.

well, it does not yet amount to a critical monism. On the problem before us, critical monism by virtue of its constructive spirit suggests that there is perhaps no event in the physical world which does not involve mechanism, nor any event in which, in the last analysis, nothing but mechanism is involved. Will this suggestion stand, in the face of a critical examination of available facts?

The position suggested seems theoretically tenable, at least. An event may be one in which a machine is made use of, but when the user is taken into account, it is readily granted that the act as a whole includes something more than mechanism. What is most mechanical may conceivably be not merely mechanical, and what is most purposive may conceivably make use of mechanism. And there are strands of evidence that go to strengthen the conviction that this theoretical possibility is an actuality. As some recent writers have insisted with much force, the successive stages of cosmic and biological development have been such as we may suppose they would have been if the environment was consciously adapted beforehand to the presence of organic life and to its further evolution; so that it seems not unreasonable to entertain the view that in its general features the universe is the kind of universe a worthy Object of religious dependence might have—and indeed may have—intended it to be. Not only are the mechanical processes necessary to furnish a dependable platform for the activity of life and consciousness; even the processes of physical life, vitalistically interpreted as, on the one hand, not completely predetermined by either mechanism or purpose, and yet, on the other hand, not in themselves definitely purposive—processes which, when so interpreted, seem at first as if they must lie quite outside the domain of teleology—even these may be included under a teleological view. On second thoughts it seems quite reasonable to suppose that these vitalistic processes in the lower organisms were the necessary precondition of the later evolution of beings endowed with creative free agency. And even the fact of evil choices on the part of human free agents may be reconciled with the idea of an all-comprehensive *general* purpose in the mind of a Being to whose will these same evil choices are opposed. If the intention was that men should develop into moral character, it must also have been intended that they should be free agents, learning in the light of the consequences of their actions; and this necessarily involves the *possibility* of wrong choices. For making that possibility an actuality, it is the free agent himself that is responsible.

We now face the problem of nature and the supernatural.

On this topic the possible views may be grouped under four heads, as usual, *viz.*, two one-sided monism (extreme naturalism and the extreme supernaturalism), the corresponding extreme dualism, and a critical monism. But these views have a special relation to the views outlined in connexion with the three preceding problems. The main content of what we have called extreme naturalism is involved in extreme determinism, extreme evolutionism, and extreme mechanism. Extreme supernaturalism, whether it has any representatives among civilised adults, or not, would be a combination of notions approximately represented by extreme indeterminism, extreme creationism, and extreme finalism. To be sure, an extreme indeterminism is not very compatible, from a logical point of view, with an extreme finalism; but extreme supernaturalism is perhaps not a wholly self-consistent system. The vulgar notion of a supernatural event seems to include at once the idea of an intended and creative performance, on the one hand, and on the other hand the notion of something which could neither have been rationally predicted as certain, nor rationally expected as probable, nor even rationally waited for as possible.

Extreme dualism with reference to the natural and the supernatural, or what is often called "dualistic supernaturalism," sums up the three preceding dualisms. It holds that while most events are purely deterministic, evolutionary, and mechanical, there have been and may yet be others of a creative, teleological sort, indeterministic from our point of view, determined only by an arbitrary Will, and making use of no mechanical or evolutionary processes, nor indeed of any "second causes".

Finally, the main features of critical monism with reference to nature and the supernatural are indicated in what has been suggested under this term in connexion with the three problems last discussed. What critical monism here comes to is a natural supernaturalism and a supernatural naturalism. It would maintain that we live in an orderly universe, in which, however, there is ample room for divine and human freedom; in which also origins may be described in terms of creative evolution, and in which mechanical, vital, and humanly purposive processes may all be included in their general character, within one comprehensive plan.

We come now to the much-discussed problem of the One and the Many. Is reality fundamentally one Being, or is it fundamentally many? Here again most views may be grouped under three heads, *viz.*, extreme singularism (a less ambiguous term than the commonly-employed "monism"), extreme

pluralism, and what may be called again an extreme dualism (of the One on the one hand and the many on the other).

Extreme singularism, affirming the ultimate reality of the One, and discounting the ultimate reality of the many, has existed in various forms. Materialists have claimed to hold to it, though perhaps with doubtful justice; atomism, and similar views, taken as a complete metaphysic, suggest pluralism rather than singularism. But spiritualism, panpsychism, and especially metaphysical idealism have exhibited a strong affinity for singularism. Vitalism may also take a monistic turn, as in Bergson; and voluntarism, as in Schopenhauer. But perhaps the most characteristic instance of a monism of the One is to be found in the more neutral singularism of Spinoza, according to whom Reality is to us simply the ultimate one substance, or Being—God, or nature—of which we know only the attributes of extension or thought. Naturally, the religious affiliations of the more typical forms of singularism are with pantheism, and hence with either an extreme mysticism (well illustrated in Plotinus) or with practical irreligion and atheism. For not only does pantheism fail to do justice to the human individual; just because of this it fails in the end to do justice to the divine individual as well. And so it proves unfavourable to the vitality of both morality and practical experimental religion.

Extreme pluralism has denied the reality of any all-embracing unitary Being. Reality, in its fundamental nature, is interpreted as being a manifold of individual material atoms, or of spiritual substances, or of both, or of mutually exclusive systems of experience and thought. Here the tendency is, in denying the ultimate One, to interpret the result atheistically. Sometimes, however, a greatly reduced god is admitted as one of the community or society of spirits.

What we may call an extreme dualism of the One and the many exists in certain more or less deistic systems, according to which the One and the many both exist, but the One is not in any sense to be found in the many, nor the many in the One. The significance of the One for the many thus becomes doubtful, and finally the existence of the One also becomes a matter of doubt. Deism, like pantheism, tends toward atheism and practical irreligion.

In distinction from extreme singularism, with its pantheism and ultimate atheism; from extreme pluralism, with its explicit atheism, and from extreme dualism, with its deism and final atheism, we would suggest again a critical monism, according to which the One and the many both exist, and that in the closest relations with each other, although without

either loosing its identity, or being merged with the other. The One is immanent in the many, and yet transcendent of the many; the many are immanent in the One, and yet in a sense beyond it.

The particular view we have in mind is to be distinguished from a recent attempt to mediate between singularism and pluralism (Royce's *Problem of Christianity*, vol. ii.), in which it is maintained on the one hand that every individual is a community of interpretation (inasmuch as, in interpreting one's self to one's self, there are three distinguishable and ideally different selves, the interpreted self, the interpreter, and the self to whom the interpretation is addressed); and on the other hand that every community, even the universal human community, is an individual (since it also is unified by a mediator, or interpreter, who reconciles individual with individual). Now this levelling down of the distinction between the relation of the "I" to various momentary presentations of the "me" in a personal life on the one hand, and the relation between different persons on the other hand, as if thinking them under the same categories made them for all essential purposes the same, may be permissible for the idealistic way of thinking; but if so, it simply adds charges to the indictment against idealism. It is a fantastic construction, departing widely from common sense, and so not quite the sort of philosophy we are aiming at under the designation "critical monism".

Our point of departure must be the critical realism which was the outcome of our epistemological inquiry, and our position here must harmonise with our position with reference to the problem of matter and mind. We would suggest, then, that the universe of physical energy, with matter as one of its forms, and of psychical activity with its products, together with the vital factor, if there be such an entity in addition, be regarded as activities so intimately co-ordinated as to constitute one dynamic and organic system. The physical and vital factors constitute the Body, of which in experimental religion at its best man is aware of coming into contact with the immanent divine Spirit. Human beings would then be comparable to the organs within the organism, save that their relative independence is even more pronounced than this analogy would suggest. And yet, with all their freedom and relative independence, they are constantly dependent upon the organic One, not only physically, but also, for the highest possible spiritual achievement, religiously as well.

We now come to the last of the metaphysical problems which we shall consider—and it is the culminating problem

of critical philosophy as well as of metaphysics—*viz.*, the problem of the value of Reality, the question as to whether reality is good or bad, or in other words the problem of optimism and pessimism. Here once more we find two one-sided monisms (extreme optimism and extreme pessimism) and an extreme dualism. And we may be expected to be driven once more to search out some satisfying critical monism.

Extreme optimism has existed under several variant forms. Under the guidance sometimes of philosophical theory, sometimes of mystical fervour, it has been maintained that as All is God, and God is good, so All is good; evil is an illusion of mortal mind; whatever is, is right. (Such a position is involved in self-contradiction. It is denied that there is any evil, and it is admitted that there is at least this much evil, *viz.*, the evil of the error in mortal mind, involved in its notion that evil is real.) Again it has been maintained that evil, which is empirically real, is metaphysically a mere negation, or absence of Reality. By others it is admitted that there is real evil, which we must strive against and overcome; and yet, they say, when we come to see this "evil" as it is "in the Absolute," we find that this same evil is a good thing—to overcome! (This may be true of some kinds of "evil," to a limited extent, but not of moral evil. It is only the *possibility* of moral evil, involved as it is for the immature in the possibility of moral good, that is to be consented to as better than its opposite.) Finally, it has been maintained that while the world is not yet completely good, it has been infallibly predetermined to become what it ought to be, and that this will take place in "God's good time," regardless of what man may do or leave undone.

The main objections to all such one-sided optimism, in addition to the criticisms already offered, are that it fails to derive its estimate from all the available facts, but forces an arbitrarily chosen theory upon the facts; and that it tends, both logically and psychologically, to lull and paralyse the moral will. But if one is to be a consistent optimist, one must be able to hold that the truth will act favourably upon the moral will; and so, if extreme optimism is true in this particular application of its teaching it is not true in its general doctrine.

It has been facetiously remarked that a pessimist is a person who has to live with an optimist. There is this much truth in the observation, that an extreme pessimism tends to be begotten of an extreme optimism, by way of reaction. But it is part of the case against pessimism that it is ordinarily regarded as calling for a psychological explanation, rather

than for logical refutation. To the healthy-minded it seems abnormal and morbid.

Hindu religious philosophy has been pessimistic as regards this world and the present life, but it offers a ray of hope in the prospect—not particularly inviting to Occidental minds—of absorption into the One, or a rather negative state of being, in Nirvana. Pessimism as represented by Schopenhauer and Hartmann is more absolute still. Its only Nirvana is unconsciousness, non-existence.

In connexion with the present problem, as in so many of the other questions we have discussed, we find illustrated the old maxim, "Extremes meet". As in the case of extreme optimism, so in the case of extreme pessimism, both religious dependence and moral effort are discouraged. In the one case it is felt that everything has been done already; in the other case it is felt that nothing can be done.

Distinct from both the optimistic and the pessimistic form of extreme monism, there is an extreme dualism with reference to the problem of good and evil. In the older Christian orthodoxy, for example, it was held that for some individuals the outlook into the eternal future was absolutely optimistic, without a shadow upon it, while for other individuals the outlook was absolutely pessimistic, without a single ray of hope.

When we turn to the ways of critical monism, seeking to avoid the extravagances of monistic construction on the one hand, and yet to pass beyond the unsatisfying doctrines of dualism on the other, we find fruitful suggestions in the meliorism advocated by William James. According to this practical and common-sense doctrine, the world contains much good and much evil, and while for the future the good is in danger, it has nevertheless a fighting chance of coming out victorious. Moreover this chance will be distinctly improved, if we devote our best efforts to that desirable end. As James himself indicates, the view is more moralistic than religious.

What we would suggest, however, is, while not a less moral, nevertheless a more *religious meliorism*. Or it may be called a *moral optimism*. While it is only a good fighting chance of success that good has in its struggle with evil, and the best efforts of all moral wills are needed, it is important to note that through a certain dynamic religious relation, the moral will can be greatly reinforced and made more effective in its conflict with individual and social evil. Indeed, if humanity finds and maintains the right religious relation, the destruction of evil will be assured.

In the way, then, that we have here summarily indicated, we would undertake to verify the statement that theology and metaphysics stand in need of each other, and that the outcome of the metaphysical part of the philosophy of religion confirms the favourable verdict with reference to religion at its best, announced at the close of our sketch of the critical philosophy of religion. And with reference to what we have called critical monism, which is more a method than a set of definite doctrines, we would suggest consideration of the question whether it may not be the needed *novum organum* for philosophy, considered not as the love of wisdom simply, but as the best wisdom of the lover of wisdom.

II.—CAUSALITY, INDUCTION, AND PROBABILITY (I.).

By Philip E. B. Jourdain.

The point of view in the theory of knowledge which is associated with the names of Maxwell, Mach, Kirchhoff, Stallo, Hertz, and others seems to have first marked the realisation that the "world" which is the object of physical science is a mathematical scheme whose function it is to imitate, by logical consequences of the properties assigned to it by definition, certain processes of nature. Thus, a very simple mathematical scheme which represents, in some respects, the motion of the earth round the sun is described, in the language of geometry and dynamics,—which is merely a picturesque way of stating purely analytical propositions,[1]—as: a particle moves in the xy-plane with a certain initial velocity perpendicular to the line joining this particle to the origin of co-ordinates, and with an acceleration towards the origin which varies inversely as the square of the distance from this origin. One of the chief innovations due to this point of view was thus the replacement, for all scientific purposes, of the old notion of *cause*, which seems to have been assumed to have something to do with "reality" and yet to have a place in science, by the mathematical concept of *function*. In the first section of this paper I give a somewhat detailed sketch of the replacement, first due to Mach, of *cause* by *function*; of Mach's notion of the law of causality as what we should now—but not what he did—describe as an *a priori* principle asserting a many-one functional correlation between two groups of phenomena, neither of which is the universe; and of what is, perhaps, Mach's most striking contribution to the epistemology of physical science,—the discovery of the logical root of the specialised form of the law of causality known as "the principle of the conservation of energy". The second section is occupied with some account of my work between 1901 and 1911, on the application of logically refined modern mathematical conceptions,—such as those

[1] *Cf.* Section V.

relating to infinity, continuity, and motion,—to the determination of our image of reality. In this work I started from the above results of Mach and applied to them those conceptions chiefly due to Georg Cantor; and, on the appearance of Mr. Bertrand Russell's *Principles of Mathematics* of 1903, I thought it possible to include his discussion of such points as *causality* in the same general point of view. The third section is devoted to Russell's work. About 1912, the apparent importance of what Russell called "the inductive principle," as a foundation for "the law of causality," introduced a modification of his views. This modification implied that my view of causality as a problem of extrapolation which depended on the nature of the functions assumed, and had no reference to the notion of probability, did not go to the root of the matter. However, in the fourth section of the present paper, I think that I have brought forward a rigid proof that the principle of causality is an *a priori* principle which is more fundamental than induction, and the probability on which it depends.[1] This I have done by two lines of argument: firstly, I have shown that, from the point of view of modern mathematics, there is no limitation whatever implied in speaking of anything as a "function" of anything else. Russell has tacitly implied that, when he says that one thing is a "function" of another, he means that the function is of a special nature (analytic, in fact). He cannot then use the fact of this special nature and at the same time deny that that nature is, with him, fundamental. The second line of argument is that the notion of causality appears in the notion of probability, and consequently causality cannot be defined in terms of probability.

Besides this review, and criticism of an attempt to found the notion of causality on that of probability, I attempt, in the fifth section, to give a connected theory of the epistemological foundation of mathematical physics: in it "the principle of causality" is the assumption that there is a certain one-one relation between any group of the images of elements —the images of sense-data—which are fundamental in physical science and the "universe" of them; the principle will be found to be not unplausible and must be *a priori*. It is not asserted that there *is* such an *a priori* principle, but

[1] My friend Mr. A. E. Heath most opportunely warns me that this remark might be taken by some philosophers to imply a "return to active causation," whereas it is nothing of the kind. I mean by "cause" the logically rigorous un-animistic notion used in science, and my discussion has nothing in common with the claim that, since science can only reach descriptive formulæ, science is bankrupt, because real, active causation is the ultimate goal of knowledge.

merely that, *if* there are "laws of nature," they must be *a priori*; for it is, in general, logically impossible to determine a law from a finite number of observations, and "probability," even if it could—which would seem doubtful [1]—serve to bridge over the gap between observation and law, cannot, if we wish to avoid vicious circles, be used to define "causality". Though we may have to assume that there are "laws of nature," we cannot really prove, except by introducing some further hypotheses, that, for instance, the law of gravitation is such a law.

In the coming second part of this paper, I will examine the notion of probability, and will try to prove that it is not a purely logical notion, but itself depends on the particular world with which we deal. In the world which we have the fortune or misfortune to inhabit, the fundamental equations of dynamics determine paths by the method of least squares.

I.

Mach seems to have been the first to show that the concept of *cause* can be replaced by the mathematical concept of *function*,[2] and this replacement has become almost a commonplace to those who are interested in the logical foundations of the science of physics. This was clearly done in a work published in 1872, and in the same book [3] he expressed his now well-known standpoint that psychology, physics, and psychophysics are sets of inquiries into the connexions among themselves and with each other of (1) our presentations, and

[1] In No. 108 of MIND, Mr. C. D. Broad has shown in detail "that the degree of belief which we actually attach to the conclusions of well-established induction cannot be justified by any known principle of probability, unless some further premiss about the physical world be assumed" (p. 389; *cf.* pp. 399, 402), and will maintain, presumably in the present number, "that it is extremely difficult to state this premiss so that it shall be at once plausible and non-tautologous" (p. 389; *cf.* p. 404). The first contention is a welcome confirmation of my views; while I can only hope that Mr. Broad's future arguments will not make me regret that I did not refrain from publishing my attempt at a formulation of an *a priori* law of causality until I could tread in his cautious footsteps.

I hope that I have clearly made out, in my second part, good reasons for dissenting from Mr. Broad's apparently dogmatic view (p. 392) that the "laws of probability are laws of logic, not of nature".

[2] The English translation of the important book published by Mach in 1872 (*History and Root of the Principle of the Conservation of Energy*, Chicago and London, 1911) will here be referred to as *C. of E.*, and Mach's *Mechanics* (3rd edition of the English translation, Chicago and London, 1907) as *M.* *Cf. M.*, p. 555; *C. of E.* pp. 61, 90, 98.

[3] *Ibid.*, pp. 91, 95.

(2) what he called "our sensations" and later "elements,"[1] and what we now call "sense-data" or more shortly, "sensa".

According to Mach, "the law of causality" is "the presupposition of the mutual dependence of phenomena".[2] Again: "The business of physical science is the reconstruction of facts in thought. . . . The rules which we form for these reconstructions are the laws of nature. In the conviction that such rules are possible lies the law of causality. The law of causality simply asserts that the phenomena of nature are *dependent* on one another. The special emphasis put on space and time in the expression of the law of causality is unnecessary, since the relations of space and time themselves implicitly express that phenomena are dependent on one another."[3] This is to go towards showing that "the broad view expressed in the principle of the conservation of energy . . . is a condition of logical and sound scientific thought generally".[4] Yet again: "We have grown used to considering natural phenomena as dependent upon one another";[5] and since "temporal" and "spatial" determinations are, as has been indicated above, merely determinations of phenomena by means of other phenomena, we can eliminate the mention of time and space in Fechner's formulation of the law of causality: "Everywhere and at all times, if the same circumstances occur again, the same consequence occurs again; if not, not".[6]

Thus the law of causality is the supposition that, between the phenomena $\alpha, \beta, \gamma, \ldots \omega$, certain equations subsist, the number and form of which are to be found empirically;[7] but we can never discover anything which we might try to express by the phrase "the behaviour of the totality of phenomena".[8] Yet immediately after this Mach went on to say: "Let us call the totality of phenomena on which a phenomenon can be considered as dependent *the cause* [of α]";

[1] *Cf. C. of E.*, p. 102, and Mach's *Analysis of Sensations* (2nd edition of the English translation, Chicago and London, 1914), pp. 5, 11, 16-18.

[2] *C. of E.*, p. 61; *cf.* p. 102.

[3] *M.*, p. 502; *cf. C. of E.*, pp. 89-90, 95. *Cf.* also Section V. below.

[4] *M.*, p. 502.

[5] *C. of E.*, p. 59.

[6] *Ibid.*, pp. 60-61; *cf.* p. 98.

[7] *Ibid.*, pp. 61-62.

[8] *Ibid.*, pp. 62-63. In the later *M.* (*cf.* p. 502), there is, however, mention of the possibility of knowing *all* the values of $\alpha, \beta, \gamma, \ldots$ As the next sentence quoted in the text shows, Mach's confusion is due to his anxiety to retain the common-sense view that it is not quite *everything* that causes α (for example, my writing this will probably not influence the next parliamentary elections), even when his theory (logically developed, as I shall try to develop it) requires this view to be given up. *Cf.* also *M.*, pp. 224, 233, and *Principien der Wärmelehre*, 2nd edition, Leipzig, 1900, p. 338, note.

then a is determined *uniquely* by the cause.[1] The principle of "sufficient reason," which has often been used by eminent scientific men, is "only another form of the law of causality" (1868),[2] the "inverse of" it,[3] or is not essentially different from[4] that law,[5] "asserts nothing more than that the effect cannot by any given set of circumstances be at once determined and undetermined";[6] and is, like that law, barren in default of positive experiences. The principle of "excluded perpetual motion" is another form of the law of causality: "If a group of phenomena is to become the source of continual work, this means that it shall become a source of continual variation of another group of phenomena. For, by means of the general connexion of nature, all phenomena are also connected with mechanical phenomena, and therefore with the performance of work. Every source of continual variation of phenomena is a source of work, and inversely."[7] Some simple consequences of the phenomena $\alpha, \beta, \gamma, \ldots$ being one-valued functions of $x, y, z, \ldots$ were then deduced, and the facts emphasised that (1) these theorems do not apply merely to mechanics, and (2) the theorems are barren without experiences.[8]

Thus, "the theorem of excluded perpetual motion is merely a special form of the law of causality, which law results immediately from the supposition of the dependence of phenomena on one another—a supposition which precedes every scientific investigation, and which is quite unconnected with the mechanical view of nature, but is consistent with any view if only it [that view] retains a strict rule by laws".[9] This theorem, indeed, is reducible to the purely logical truth that, if $\lambda, \mu, \nu, \ldots$ are one-valued functions of $\alpha, \beta, \gamma, \ldots$ and $\alpha, \beta, \gamma, \ldots$ pass to values $\alpha', \beta', \gamma', \ldots$ so that $\lambda, \mu, \nu, \ldots$ pass into $\lambda', \mu', \nu', \ldots$ then, if the set $\alpha', \beta', \gamma', \ldots$ be brought back to $\alpha, \beta, \gamma, \ldots$ the set $\lambda', \mu', \nu', \ldots$ will return to $\lambda, \mu, \nu, \ldots$.[10]

II.

Thus it is evident that Mach maintained that what he held to be "the law of causality" (a many-one functional correlation of $x, y, z, \ldots$ with $\alpha, \beta, \gamma, \ldots$ was an *a priori* postulate of science. It was from this point of view that I

[1] *C. of E.*, pp. 63-64; *cf. M.*, p. 502.
[2] *C. of E.*, p. 81.
[3] *Ibid.*, p. 65.
[4] *Ibid.*, p. 66.
[5] *Ibid.*, pp. 65-69.
[6] *M.*, p. 502.
[7] *C. of E.*, p. 69.
[8] *Ibid.*, pp. 69-71; *cf.* also *M.*, pp. 502-504.
[9] *C. of E.*, pp. 73-74.
[10] *M.*, p. 503.

began, about 1901, to attempt the formulation of the restrictions on these one-valued functions, as regards continuity, analytic character . . ., which are necessary if the functions are to be employed for certain purposes in mathematical physics.[1] For example, when, in the theory of sound, we pass from a massless "string" loaded with a finite number of masses to the limiting case of a dense and continuous "string," we imply that the construction of the "string" is assumed to be, in general, a *continuous* function of the time.[2] About this time I had become convinced of the importance of cardinal and ordinal investigations of those aggregates D such that the values of a certain function are determined for its whole range of significance,—which is usually wider than D,—when the values of the function are given for D alone. For example, in the case of a real *continuous* function of one real variable, the ordinal type of any D is η; in the case of a real *analytic* function of one real variable, the type of any D is ω.

In continuation of these inquiries I naturally came across the problem of constructing functions of certain kinds solely from their values at an "aggregate of definition," as I called such an aggregate as D; and, for certain large classes of functions, I solved the problem quite completely in a paper written in 1902-3 and published in 1905.[3] It is clear that these inquiries throw some light on the law of causality, which appeared to me to be a problem of extrapolation, and in 1908 I published [4] the first fragmentary results of an inquiry, partly based on the paper to which I have referred, into the possibility of exact formulations of questions in the foundations of physics when use is made of the conceptions introduced by the modern mathematical theory of aggregates.

[1] *Cf.* my article quoted below in the *Monist* for 1908, pp. 222-223.

[2] I think that this problem was the first which I solved in the present order of inquiries. In the spring of 1902, I discussed this question with Dr. A. N. Whitehead, whose lectures on sound and waves at Trinity College, Cambridge, I was then attending; and who was so kind as to be interested in my communication. It was printed in 1908 on p. 225 of the article mentioned in the preceding note. On p. 224 of the same article is mentioned the fact that conditions for the existence of a solution of a system of differential equations provides an answer to a fundamental physical question; and this fact I spoke of to Mr. B. Russell in the autumn of 1902. I mention all this merely to help in showing that my work was initially independent of all but Mach, Cantor, Stallo, Hertz, Voss, Petzoldt, and many mathematicians who wrote before 1901, all of whom are mentioned in my article of 1908.

[3] "On the General Theory of Functions," *Journ. für Math.*, vol. cxxviii., pp. 169-210.

[4] "On Some Points in the Foundation of Mathematical Physics," *Monist*, vol. xviii., 1908, pp. 217-226. *Cf.* also *C. of E.*, pp. 99-101.

III.

The appearance in 1903 of Mr. Bertrand Russell's *Principles of Mathematics* seemed rather to support the view that the foundations of physics were concerned with the determination of the nature of certain functions so as to make possible the validity of—for example—the law of causality. "Causality, generally, is the principle in virtue of which, from a sufficient number of events at a sufficient number of moments, one or more events at one or more new moments can be inferred".[1] This principle seems to be not inconsistent with the one which, as we have seen, Mach accepted as *a priori*: and Russell did not, in this book of 1903, attempt to found this principle on "the principle of induction". This was attempted at a much later date; in the *Principles* there was a rather contemptuous attitude towards induction.[2] Indeed, the *Principles* was written under the influence of the conviction of the irrelevance to the results of logic and mathematics of such things as induction and psychological considerations. Of course, it is evident that this conviction is valid if we are concerned solely with the *subject-matter* of certain discoveries. That is to say, if we are solely interested in the large set of propositions which are logically implied by the small set of premisses which must be assumed as necessary for all thought, and define "mathematics" as this large set, history or the psychology of discovery are as much out of place in mathematics as a discussion of the porridge John Keats ate would be in an analysis of Keats's poetry. And this seems to me to be Russell's point of view. It depends on what is implicitly meant by "mathematics". If "mathematics" means for us, as it presumably did for Poincaré, and does for most mathematicians, a process of discovery, Russell's contempt of history—an account of discovery—is as absurd as Poincaré's emphasis on "intuition" in Russell's view. The bearing of all this on the present question is, I take it, as follows. In 1903 Russell was almost a pure logician, and, when considering dynamics, did not concern himself with the questions as to how we arrived at it and why we believe it to be true. In 1911 and later, as we shall see, such psychological questions appeared, and did, as I shall hope to show, such harm to his logic that extirpation of them is necessary.[3]

When treating dynamics, the abstract case of a swarm of

[1] *Principles*, p. 478. [2] *Cf.* the footnote on p. 11.

[3] I hope that my fears are unnecessary that Mr. Russell will in future find the increasing claims of psychology so strong that he will devote the rest of his life to a history of the Church or a treatise on animal behaviour.

particles was considered.[1] Here the only thing which it seems might correspond to what is called "causality" is the fact that, since the whole path of the swarm is determined by a system of certain ordinary differential equations of the second order, all the arbitrary constants are fixed if we know the configurations of the swarm at any two given instants, and thus the configuration at any other instant whatever is uniquely determined by the above differential equations and the above two fixed configurations. But in this discussion it seems that the question as to what meaning can be given to the word "causality" is implicitly limited to swarms whose paths are defined by ordinary differential equations of the second order, so that there are unanalysed assumptions as to the nature of the functions which give the dependences of the co-ordinates on the time which are fundamental, and that the grounds for generalisation to other physical "swarms" ought to be given. Indeed, Russell[2] himself pointed out, in another connexion, that the current definition of a differential quotient implies that a function, to be differentiable, must be one whose values—both for function and argument—are real or complex *numbers*. Also it is not quite clear why a general property of all integrals of ordinary differential equations of the second order should be called "causal"; it might surely be misleading to talk of "causality" in connexion with a geometrical curve whose differential equation is of the type just mentioned.

Very much the same point of view was repeated by Russell in an article first published in 1912 and reprinted in his recent book called *Mysticism and Logic*.[3] The type of an advanced science was again taken to be gravitational astronomy, in which all the motions are described by ordinary differential equations of the second order. In the dynamics of a swarm of particles, "there is nothing that can be called a cause, and nothing that can be called an effect; there is merely a formula. Certain differential equations can be found, which hold at every instant for every particle of the system, and which, given the configuration and velocities at one instant, or the configurations at two instants, render the configuration at any other earlier or later instant theoretically calculable. That is to say, the configuration at any instant is a function

[1] *Principles*, pp. 479, 480, 481, 486.

[2] *Ibid.*, pp. 326, 330 (see also pp. 468, 480, 483). *Cf.* Section V. below. Since the "continuity" of a function does not, in spite of what Russell maintained in 1903, require that its values be numerical, it follows that the restriction that the functions in the "dynamical world" shall be continuous is not narrow enough.

[3] London and New York, 1918, pp. 180-208.

of that instant and the configurations at two fixed instants. This statement holds throughout physics, and not only in the special case of gravitation."[1] In the formulation of what may be called "the law of causality," which is derived from an abstract dynamical consideration, "there is no question of repetitions of the 'same' cause producing the 'same' effect; it is not in any sameness of causes and effects that the constancy of scientific law consists, but in sameness of relations. And even 'sameness of relations' is too simple a phrase; 'sameness of differential equations' is the only correct phrase."[2] And then: "If the law of causality is to be something actually discoverable in the practice of science, the above proposition has a better right to the name than any 'law of causality' to be found in the books of philosophers. . . . No one can pretend that the above principle is *a priori* or self-evident or a 'necessity of thought'. Nor is it in any sense a premiss of science: it is an empirical generalisation from a number of laws which are themselves empirical generalisations."[3]

The last sentence brings us to the great difference that separates Russell's work of 1903 from, say, his *Problems of Philosophy*, which was first published in 1912. In 1903, all those questions which arise when we inquire what gave rise to the discovery of the principles of a deductive science are put on one side, and the purely logical question of analysis of the results of the science, with a view to the discovery of the premisses, is alone treated. But, after 1903 and before 1912, the motives which gave rise to scientific principles seem to have been considered by Russell as interesting things. Thus in the paper quoted above, we read that "it must, of course, be admitted that many fairly dependable regularities of sequence occur in daily life. It is these regularities that have suggested the supposed law of causality; . . . I . . . do not deny that the observation of such regularities, even when they are not without exceptions, is useful in the infancy of a science. . . . What I deny is that science assumes the existence of invariable uniformities of sequence of this kind, or that it aims at discovering them. . . . In short, every advance in a science takes us further away from the crude uniformities which are first observed, into greater differentiation of antecedent and consequent, and into a continually wider circle of antecedents recognised as relevant."[4] Again, "such laws of

[1] *Myst. and Logic*, p. 194.

[2] *Ibid.*, pp. 194-195; *cf.* the apparently inconsistent remark in Russell's "Lowell Lectures" (*Ext. World*, p. 214). These lectures were given in 1914, *between* the two dates of publication of the above essay.

[3] *Ibid.*, p. 195.

[4] *Ibid.*, pp. 187-188.

probable sequence, though useful in daily life and in the infancy of a science, tend to be displaced by quite different laws as soon as a science is successful".[1] The old "law of causality" is not assumed by science, but "something which we may call the 'uniformity of nature' is assumed, or rather is accepted on inductive grounds. The uniformity of nature does not assert the trivial principle, 'same cause, same effect,' but the principle of the permanence of laws. That is to say, when a law exhibiting, *e.g.*, an acceleration as a function of the configuration has been found to hold throughout the observable past, it is expected that it will continue to hold in the future, or that, if it does not itself hold, there is some other law, agreeing with the supposed law as regards the past, which will hold for the future. The ground of this principle is simply the inductive ground that it has been found to be true in very many instances; hence the principle cannot be considered certain, but only probable to a degree which cannot be accurately estimated."[2]

IV.

Thus, Russell's later point of view may, it seems, be described as follows. With regard to the view that mathematical physics is a study of the functions which are—theoretically at least—known for all the values of the aggregate called "the time" when their values for certain aggregates of "instants" are given, it seems that we can only believe that "nature" *is* governed at all times by laws by an application of "the inductive principle".[3] This objection was urged against me in a conversation of 1913, with Russell, when I tried to explain my point of view of investigating the foundations of mathematical physics by determining the natures of the various functions used.[4] But it seems to me that there are two reasons against regarding induction as more fundamental than causality. I will state these reasons in some detail, and it will then follow, I think, that my theory (I do not say "belief" intentionally; a belief seems logically irrelevant) of the universal reign of law cannot be based on considerations of probability. In fact, in the first place, to say that A is a "function" of B does not mean, in mathematics since about 1830, that there is a formula from which, given A, B may be calculated. This is a property of *special* functions; and Russell, by assuming implicitly that his

[1] *Myst. and Logic*, p. 194.
[2] *Ibid.*, p. 196; *cf.* p. 192.
[3] *Cf. Problems*, pp. 98-103, 107.
[4] *Cf.* the second section above.

"functions" are of some such special nature, silently admits my theory while refusing to do so in words. In the second place, the notion of *probability* depends on that of *cause*, whereas Russell would make *cause* depend, through induction, on *probability*.

(1) In the first place, mathematicians have become accustomed, at any rate since the time of Dirichlet, to regard the word "function" as meaning a correspondence between two variables even when the correspondence cannot be expressed by any known combination of known laws of calculation.[1] Thus when we say that, for example, x is a function of t, we do not imply that, when t is fixed in value, the corresponding value of x can be calculated by a formula which expresses the law or combination of laws of correspondence: indeed it can be established by simple arguments of which forms were published by Cantor in 1873, 1883, 1892, and 1897,[2] myself in 1903 and later,[3] and Russell in 1914,[4] that there are functions, in the general sense of the word, which cannot be represented as limits of infinite series of continuous functions. The importance of such reflexions in this connexion is that, when we say that x is a "function" of t we do not imply that x "depends" on t in the sense in which we might say that x "is given in terms of" t by a formula or "law of nature". It might be urged that such a function would be incapable of definition, but this would be a mistake, as is clearly shown by Cantor's method (1892) of defining uniquely a one-valued function which must necessarily be omitted from any one-one correlation of the arguments of this function with the class of one-valued functions possible for the same arguments. Possibly Russell rediscovered the reasons which led d'Alembert, about the middle of the eighteenth century, to maintain that the "arbitrary" functions which appear in solutions of certain partial differential equations obey the "analytic" law of being determined for the whole ranges of their arguments by the fixation of their values for much smaller ranges of these arguments. In any case, in Russell's formulation of the law of universal causation, he proceeds as follows:[5] "There are such invariable relations

[1] There is no more reason for maintaining that an arbitrary sequence of numbers y cannot be a *function* of another arbitrary sequence x than there is for maintaining the falsity of the proposition that any false proposition *implies* any proposition.

[2] *Cf.* his *Contributions to the Founding of the Theory of Transfinite Numbers* (English translation), Chicago and London, 1915, pp. 39-40, 64-65, 82, 171-172.

[3] *Cf. Journ. für Math.*, vol. cxxviii., pp. 177-180, 210.

[4] *Monist*, vol. xxiv., p. 14.

[5] *Ext. World*, p. 221; *cf.* p. 219.

between different events at the same or different times that, given the state of the whole universe throughout any finite time, however short, every previous and subsequent event can theoretically be determined as a function of the given events during that time". That there is here an assumption of a certain general property of those functions to which Weierstrass applied the name "analytic" can be proved quite simply by showing that we cannot,[1] if the function is not analytic, deduce the states at all times from the states during some interval of time. Suppose that the state were known to be constant throughout the interval of time from a to b, including the ends: if the function were analytic we could conclude that the state is constant throughout all time; but this need by no means be the case if the function were merely continuous or, say, merely differentiable a finite number of times.

Thus it seems that Russell concealed his assumption that the functions in the law of causality are analytic by refusing the name "function" to a function unless it is analytic. Accordingly, he really maintained—as I did long ago—that our functions must be specialised for every law of causality to hold, but his view was the absurd one that "the principle of induction" is sufficient for this specialisation.

(2) I come now to the objection to founding "causality," through "the principle of induction," on the notion of "probability". This objection arises very simply from the evident reflexion that, as appears obviously in the usual (Laplace's) definition of "probability," this notion implicitly contains a reference to an assumed non-existence of certain "causes".[2] It seems, indeed, that it is when we try for instance, to decide, without making use of the notion of "cause," which—if any—is the "most probable" of various configurations at time t of a physical system, that we meet these "terrible difficulties in the notion of probability" spoken of by Russell.[3] And, as an attempt to define causality in terms of probability is an attempt to move in a vicious circle, we can hardly avail ourselves of Russell's permission to "ignore them at present".

[1] Strictly speaking we should add "always": in fact, the property mentioned belongs to all "monogenic" functions, as Cauchy and Borel have called them; but of them, analytic functions, from the point of view of the physics of the present, seem to form the most important class, while all continuous functions or all differentiable functions, for example, have not the property referred to.

[2] S. Pincherle, *Scientia*, vol. xix., 1916, pp. 417-426; *cf.* my account in MIND, N.S., vol. xxvi., 1917, pp. 243-244.

[3] *Ext. World*, p. 36.

V.

We will now enter on the more properly constructive part of this paper. I will begin by restating shortly some fundamental things in the theory of our knowledge of the "world" as it occurs in science. These things are all, perhaps, fairly well-known, but they are indispensable for my new theory of causality.

In all natural science our aim is to complete facts in thought —whether for practical or purely intellectual ends or both. For this purpose we set up a *model*—a mathematical construction in thought—and so arrange that the logical consequences of premisses in our model should represent—at least approximately—the events which have very frequently followed certain other events in nature corresponding to our premisses, while there are other consequences which represent what might be unobserved events. Thus our model might contain the formula $s = \frac{1}{2}gt^2$, which was found by Galileo in his researches on falling bodies, and which gives results for times at which observations have not, or have not yet been made. We then presuppose that it is possible to complete facts in thought. If this supposition were not true, it would obviously be impossible to have any science which was not merely a collection of descriptions of isolated observations. Since we cannot prove logically the existence of unobserved events which can be deduced without waiting for them, we must *assume a priori* this existence, provided that we have reason to wish to maintain that there are such events; possibly because we are not satisfied that the only possible "science" of the real world around us is the deduction of propositions from a "model" set up by us to imitate things once observed, although there is no reason whatever for believing or disbelieving that these propositions represent completions of facts in the real world.

It was under the assumption that we must know that it *is* possible to complete facts in thought that Russell[1] said that "there must necessarily be *some a priori* principle involved in inference from the existence of one thing to that of another"; but he chose, on the grounds that the formulation of the law of causality seemed to him complicated, and its assumption *a priori* therefore unplausible,[2] that "the principle of induction" is more fundamental. He rightly remarked[3] that Mill's "method of simple enumeration" does

[1] *Ext. World*, p. 223.
[2] *Ibid.*, pp. 35, 223; *cf. Myst. and Logic*, p. 195. [3] *Ext. World*, p. 36.

not invariably give true results, and therefore discovered a way of saying something involving the method of simple enumeration that is invariably true. This discovery was that its "probability" increases indefinitely with the number of instances. Since it seems—and I will try to establish the points in the second part of this paper—that *probability* is not a purely logical concept, but necessarily implies a mental attitude towards what I will call "propositional operations," and further implies a certain limitation on all the functions which the method of probabilities seeks to determine logically speaking this means no more than the platitude: "The propositional function $\phi(x)$, where x is variable, is not true for all x's, but the function 'for every x either $\phi(x)$ is true or not-$\phi(x)$ is true' is invariably true."

But quite apart from this, Russell's argument [1] that causality depends on "the inductive principle" succeeded in seeming plausible only because *time* is introduced. The arguments, I think, would only appeal to those who, like a certain eminent divine, see no reason against the theory that the sun was created at six o'clock on a certain morning long ago. But *time* is merely the dependence of Mach's "elements" on one another, and it is therefore arguing in a circle to maintain that we cannot know that there *are* such functional dependences without the principle of induction.

If, in Russell's definition (1903) of "causality" which we have quoted above, we eliminate the reference to time and space in the manner indicated by Mach, and assume that Mach's word "function" has the meaning *analytic function* which Russell tacitly ascribed to *his* word "function," there seems to be complete identity between the above definitions of "causality" given by Mach and Russell. However, when we are considering the "world" of mathematical physics, we will preserve, in conformity with tradition,[2] a reference to "space" and "time". In mathematical physics, what we do is to consider an aggregate (A) of four dimensions (x, y, z, t) in which each dimension consists of a continuous series of real *numbers*;[3] this "space-time" aggregate forms a numerical picture of what we know in the "real world" as "space" and "time," and seems to be what we may call "absolute"[4]

[1] *Problems*, pp. 93-108.

[2] We will not inquire here whether it is possible to construct a mathematical physics which is not a description of things in terms of lengths. A passage in Mach's *Wärmelehre* (p. 117) indicates that we can represent "characteristics of state" by the elements of our number-continuum in mathematical physics.

[3] *Cf.* Section III. above.

[4] *Cf.* note 16 in *Monist*, 1908, pp. 221-222.

space and time in Newton's sense. With this apparatus of space-time, those complexes of sense-data which we describe as "events in the real world," such as "positions and motions of bodies," are represented by functions defined in the above-mentioned aggregate or "world of physics".[1] If this is the "dynamical world," all "events" are configurations.[2] This aggregate must be numerical if the motions are to be described by differential equations, for the same reasons that, as Russell pointed out, the concepts of differential coefficient and integral imply *numerical* aggregates and not merely any ordered aggregates.[3] Indeed Russell also maintained that the concept *continuous function* necessitated a numerical aggregate for its definition, but I succeeded in 1905 in giving a purely ordinal definition of continuous function. As W. Sierpinski[4] has pointed out, a proof of the equivalence of the numerical and ordinal definitions requires the admission of Zermelo's principle of selection; but, since that principle can now be proved, there seems to be no difficulty in point of principle in replacing the numerical definition by the ordinal definition.

In traditional dynamics, t is independent of x, y, and z; but the theory of relativity requires us to suppose that t is not thus independent. But such questions do not affect the fundamental principles of our setting up, for scientific purposes, a space-time model of the "real world" around us.[5]

The principle of causality, which underlies all induction, is simply a problem of extrapolation: if we consider various particular values of an unknown function of the aggregate A to be given and which represent various events, we have to seek a principle in virtue of which we can conclude the values of such a function at other values of (x, y, z, t). It does not affect the nature of the principle if these other values belong to what we call by analogy the "future" or the "past"[6] of our t-dimension in the space-time aggregate. Of course, if the functions are quite general, no such inference can be made; so that, if such inferences are to be possible, the functions in question must be of such a restricted nature as to allow inferences from values given to values not given. Now, if a function of p, where p is, in a mathematical phrase, an "arithmetical

[1] *Cf. Monist*, pp. 218-221, 223.
[2] *Cf.* Russell, *Principles*, p. 486; *cf.* pp. 468, 480.
[3] *Cf.* Section III. above, and *Principles*, pp. 326, 330.
[4] "Sur le rôle de l'axiome de M. Zermelo dans l'Analyse moderne," *Compt. rend.*, vol. clxiii., 1916, pp. 688-691.
[5] *Cf.* also Mach's note in *C. of E.*, p. 95.
[6] *Cf.* Russell, *Problems*, p. 101; *Ext. World*, p. 224.

point" of A, is continuous and the values of the function are known for any infinite aggregate of values of p, we can conclude the values of the function at every point which is a limiting point of the p-aggregate just referred to. If the function of p is differentiable, the same thing can be done, but we cannot say any more unless we know that the function has other properties besides that of merely being differentiable. But if the function is analytic, then, if we know its values for the set of values of p in *any* "sphere" round some p, we can conclude its value for any other value of p in the domain of existence of the function. If, then, we have reason to suppose that the functions which we assume to lie, as a subject for investigation, at the bottom of natural phenomena are of any special nature, this nature may enable us to give some definite information as to the form in which we can apply induction. *If* we know, in some way or other, that a function is a polynomial of the nth degree,[1] we can conclude that the determination of $n + 1$ particular values determines uniquely the function for its whole course: in this case our function, unlike the majority of even analytic functions, does not require determination for an infinity of values.

If we understand by an "isolated" physical system one which does not embrace the universe and which is not at all determined by that part of the universe outside it, and *vice versa*, Mach's statement of the law of causality comes to the statement that there are isolated finite systems S and that each S may be divided into two groups of elements, $x, y, z, \ldots$ and $\alpha, \beta, \gamma, \ldots$ such that each element of the latter group is a one-valued function of the whole set of variables $x, y, z, \ldots$ so that there is a *many-one* correlation of the group $x, y, z, \ldots$ with each of the group $\alpha, \beta, \gamma \ldots$.[2] If the above division of S is into the class of one (say α) of the elements and the class of all the rest, the latter class, less any elements, if there are such, on which α does not depend and which do not depend on α, may be called "the cause of α". We shall have to remove some contradictions in this theory.

(1) Strictly speaking, there are no isolated systems. There are systems which are *practically* isolated, and the discovery

[1] *Cf. Monist*, 1908, pp. 225-226.

[2] That the correlation is *many*-one was explicitly pointed out in the last paragraph of p. 70 of *C. of E.*, and again, still more strongly in *M.*, p. 503. In the *Wärmelehre*, p. 325, the special case of this correlation being one-one is alone considered, although there is not any logical necessity for ϕ to represent a *one*-one, rather than a many-one, correlation in order to allow us to conclude, from the premiss that $\alpha = \phi(x, y, z, \ldots)$, that purely periodic variations of $x, y, z, \ldots$ do not determine permanent alterations of α.

of such systems is one of the most important aims of natural science.[1] But this aim is not the question here: we are concerned with the logical question as to whether we can make the image of reality we use in physical science into what Hertz called a "permissible" scheme, by all the refined tests that modern mathematics and logic can give. "The cause of a" then strictly embraces the "universe of physics".[2] Further, a must of course be a *complex*.

(2) If causes had many-one, which were not one-one, correlations with their effects, there would evidently be two different complexes u and u' of elements which would be "causes of a". Let v be the common part, if any, of u and u', and denote the other parts by "$u - v$" and "$u' - v$"; then the complex (v, a) must be the cause of the different complexes $u - v$ and $u' - v$. Hence we could always find a cause with a one-many, which was not a one-one, correlation with its effect, and this is contrary to the hypothesis. Hence, if an effect is determined—and thus uniquely—by its cause, the correlation must be one-one. Thus, a must—if the universe consists of more than one thing—be a complex which "mirrors" the universe. Thus Mach's formulation cannot be accepted except as an approximation. As was indicated above, in the account given by Mach of the functional dependence of changes in a portion of nature on changes outside that portion, the functions in question were, since Mach never concerned himself with the more exact aspect of mathematics, many-one, and consequently he was forced to admit that there are strictly, as there appear to be, actual cases[3] in which a certain phenomenon B can vary without a corresponding variation of the phenomenon A, although to different A's correspond different B's.

Thus the principle of causality may, it seems, be stated, without the use of the notion of probability—which, even if we do not admit its non-logical nature, is at any rate an undefined idea—as follows. Firstly, let us call a "portion round (x, y, z, t)" of the "world" formed by our model, a closed and everywhere-dense (in the language of the theory of point-aggregates) aggregate of four dimensions to which the point $p = (x, y, z, t)$ is interior. Then we assert that there is a one-one correspondence between the physical system π contained in any portion P of this world and that formed by the whole of the external world, so that any change in the portion considered necessarily implies some change in all the rest. What

[1] *Cf. C. of E.*, p. 64. [2] *Cf.* Russell, *Ext. World*, p. 226.
[3] *M.*, p. 503.

is meant is that, strictly speaking, nothing in the world of mathematical physics can change without everything else also changing; of course we so arrange that this world closely imitates the world around us in that the influence of changes within a portion rarely conditions great changes in very distant portions. This condition sounds vague, but, as anyone who has had to formulate properties of rapidity of convergence to a limit will easily see, this vagueness is not essential, and we can formulate the condition in logical terms.

The consideration of a case in abstract dynamics will help us to realise that the suggested principle of causality is not really paradoxical. Consider two gravitating spheres, of masses m and n, which are in contact through a compressed and massless spring which tends to force them apart. Suppose that the spheres and the spring are the only bodies in the universe, and that we begin to consider them when the spring is forcing them apart. Now, however small n is as compared with m, the common centre of inertia of the two spheres remains fixed; so that, if the smaller one moves towards, say, the origin, the larger one moves in the opposite direction. If, then, the actual world is very like its image in dynamics, we see that, for example, the whole earth moves even if a small portion jumps at the surface of the earth. Such instances take away the appearance of paradox in the principle of causality formulated above; and the paradox is still farther removed when we remember that, for practical purposes all of what we call "very minute alterations" may be disregarded. Thus, although strictly speaking the correspondence between the variations in any portion and those in the whole is one-one, for practical purposes we may regard the correspondence, with Mach, as many-one and say that changes may possibly take place without any (perceptible) alteration in most other things. This comes to the same thing as pointing out that there are "practically isolated systems".[1]

[1] *Cf.*, *e.g.*, *Myst. and Logic*, pp. 197-198; *Ext. World*, p. 226.

(*To be concluded.*)

III.—THE SYLLOGISM AND OTHER LOGICAL FORMS.

By H. S. Shelton.

I. Philosophical Introduction.

I do not know to what extent the views put forward in this article are new. It has always seemed to me that in logic, as apart from the extension known as methodology, I have been restating only very slightly modified what I had thought to be the traditional view. But I am unable to say where the traditional view is to be found. Scholastic logic undoubtedly is best entitled to the name because it has for centuries preserved continuity. But, on any particular question, if you enquire closely enough, scholastic logic explains itself by scholastic philosophy, which none but the schoolmen accept. Here modern logic differs. It has no philosophy; there are only the views of this or that philosopher. Moreover, the modern tendency has been continually to focus attention on the metaphysical side where there is no agreement, rather than on the more strictly logical side where some degree of solidity can be attained. Hence if I am asked at any point why a certain view seems to me to be traditional, I cannot, unless it is accepted by scholastic philosophy, give any satisfactory answer.

In the following exposition, as I shall show by footnotes, I shall be found to be in agreement with various logicians on various points. But, on the main question, namely, the enquiry what is and what is not a valid logical form, and what relation there may be (if any) between the syllogism and valid forms other than the syllogism (if any), I cannot anywhere find a clear systematic and consistent view.[1] I can therefore only say that the origin of this statement is the

[1] The question is slightly treated in Keynes' *Formal Logic*, pp. 385-389. Coffey, *Science of Logic*, vol. i., p. 385. These writers give general references to Whately, De Morgan, Venn, and others. I have not thought it profitable to follow back all these references, but readers who think it worth while may do so for themselves.

discussion which has been running in MIND since 1914, and that I am more or less indebted to all who have taken part, together with one or two correspondents, in that their contributions or letters have suggested to me that this or that point is worth discussing. Amongst these I have found Mr. Alfred Sidgwick's syllogistic statement of the *a fortiori*, communicated to me in a private letter, of exceptional value.

It is desirable to preface this logical essay with a short explanation of the philosophical standpoint which lies behind it. This is the more necessary because so much of present day logical theory consists of such discussions. Such assumptions as I have to make at the outset would be described by many as epistemological. Although I think it absurd to subdivide philosophical discussion into arbitrary branches as if it were exact knowledge instead of a medley of learned opinions, the distinction may be of service here in that it enables me to make it clear that the views I am expressing rest on a particular description of what we are doing when we make a deduction and are independent of why deductive reasoning should be what it is.

This view of the nature of deductive reasoning I have previously put forward on more than one occasion.[1] But, to avoid continual back references, I have thought it well briefly to restate it. The reasons I cannot give in full, although I shall presently give some. For others I must ask those sufficiently interested to refer to previous work; but the view itself I will endeavour to make clear.

The view is that when we make any deduction whatever, small or great, concerning any question of material fact, our so doing involves three processes: (*a*) We abstract from reality concepts of the aspect with which we are dealing. (*b*) We reason with regard to these concepts by means of some universal rule, true or false, expressed or implied. (*c*) We refer our conclusion back again to reality, and it is only when we have done so and empirically verified it that we can be sure that our conclusion is materially true. Process (*b*) only is the true sphere of formal logic. For this strict and invariable rules can be formulated. Processes (*a*) and (*c*) are empirical and fall within the extension known as methodology. This extension is of greater consequence in scientific work than elsewhere, but the empirical element is always found in practical reasoning.

The acceptance of this description is consistent with

[1] See "A Theory of Material Fallacies," *Proc. Aristotelian Society*, 1911-1912; "The Limits of Deductive Reasoning," MIND, Jan., 1912, also, on the nature of axioms, "Evolutionary Empiricism," MIND, Jan., 1910.

various metaphysical interpretations. You may with the schoolmen say that the truth shown by reason is the highest form of truth, and that empirical or material truth lies on a lower level. You may with various schools of metaphysicians postulate that reality is rational, in which case reasoned conclusions, and general truths are more real than empirical reality. You may, with the pragmatist say that the value of reason depends entirely on its practical working, and you may define practical in any way you please. You may with Bergson say that reason is merely an instrument of survival, and that real truth is to be found in intuition. For myself I cannot understand this curious inversion nor see why, if reason is merely an instrument for survival, intuition is anything else. But none of these controversies really matter here. So long as it is admitted that the process I have described is what actually takes place in deductive reasoning it is more or less irrelevant how these and other characteristics of reasoning are explained.

Having thus cleared the ground, it will be convenient to give a short explanation of the three characteristics of deductive reasoning on which I have laid stress, and to put forward such reasoned defence of them as is possible in an introduction to the main subject of the article. Let us consider them seriatim :—

(*a*) We abstract from reality concepts of the aspect with which we are dealing.

I shall best explain this by the illustration of the method of Euclid. Although for pedagogic reasons it is desirable to preface strictly rational geometry by a practical or empirical treatment, nevertheless it is only the euclidean method that can correctly be described as deductive reasoning. This starts with strict definitions of the meaning of terms, and it is immediately apparent that what we are reasoning about is not empirical reality, but abstractions or concepts. Points, lines, triangles in the euclidean sense do not exist. In reasoning on the subject of lines we are concentrating attention on one aspect only of any real object, namely, distance in one dimension. Our conclusions are true of that aspect only, and are true of any material reality only in so far as other aspects do not affect our conclusion. I mean, in short, that any deduction is absolutely valid only with regard to the concept used.

It will be seen that the same process occurs in the formulation of any term. A description of any article as a chair, inkstand, bridge, implies an abstraction, a concept. So far from the concept being a complete description, which it is

impossible to make, it is not even an attempt. All aspects except a very few are deliberately ignored. Any term is, in short, a concept. What our principle really implies is the formal or symbolic nature of logic. Indeed I do not see that the two terms have any different meaning.

It will be convenient here to deal with the confusion of thought on the subject of symbolic logic. All deductive logic is symbolic and cannot be anything else. A concept is a symbol, what else can it be? Why logicians do not recognise this I do not understand. The recognition of the principle implies no opinion of the system of notation now in vogue yclept symbolic logic.[1]

On this matter I may be allowed at once to express the opinion that it is of very little value for logical purposes. Judging the logical value of symbolic logic by results, I have never yet seen a proposition proved by its aid which could not be proved much more simply by ordinary methods. Whether or no it may have value in elucidating the foundations of mathematics I cannot here discuss. This uncompromising expression of opinion concerning its logical value may, however, convince readers that the recognition of the conceptual or symbolic character of deductive reasoning does not imply the desire to substitute for formal logic any mathematical treatment. I am merely here putting forward what appears to me to be a fundamental truth concerning the nature of reasoning.

(*b*) We reason with regard to these concepts by means of some universal rule, true or false, expressed or implied.

It is desirable to make this point as clear as possible before proceeding to consider in detail the syllogism or any other special logical form. Also, as the term universal can have various shades of meaning, I have completed the description by calling it a universal rule. This does not necessarily imply the universal proposition of the logical text-books. It merely implies that we cannot make any deduction from premises, and say that our deduction is formally or absolutely valid, without implying that some rule is absolutely or universally true. This rule is so ingrained in modern logic and has been so thoroughly expounded in previous numbers of MIND, that

[1] I find that Mr. Russell is in agreement with me on this point. "Symbolic or formal logic—I shall use these terms as synonyms—is the study of the various general types of deduction. The word *symbolic* designates the subject by an accidental characteristic, for the employment of mathematical symbols, here as elsewhere is merely a theoretically irrelevant convenience" (*Principles of Mathematics*, p. 10). I should like to substitute *inconvenience* for the last word in the quotation.

I do not propose to argue it *de novo*. Nearly all formal logicians admit it. Mr. Alfred Sidgwick agrees, and even Dr. Schiller, so far as I know, does not disagree. I am well aware that so great a logician as Mill disputed it, but even Mill can occasionally be shown to be wrong by subsequent work, much in the same way as Newton has been found to have misinterpreted the phenomena of light. The opposite view, in the light of present-day discussion, appears to me to be mere confusion of thought. I will put here a simple exposition, the very hackneyed *a fortiori* will serve very well as an illustration. From A is greater than B and B is greater than C we infer that A is greater than C. The question can be put, Do we consider the inference absolute? If the reply is no, the answer is that the form is invalid. If the reply is yes, we have asserted a universal rule. To avoid all verbal quibbles I will express it as follows—When A is greater than B and B is greater than C it invariably follows that A is greater than C. If this is not a universal rule, what is? I do not mean that a universal rule obtained in this short and easy manner is suitable or convenient for any system of formal logic. But it does show that we cannot make any deduction and call that deduction valid without implying a universal rule. We make a deduction only because, consciously or unconsciously, we consider some principle to be absolutely or universally true. Whether or no any treatment of formal logic requires a preliminary admission of the use of universals more detailed or specific than this I do not know. For my purpose I hope to show that the admission of the truth even in this crude and obvious form will suffice.

(*c*) We refer our conclusion back again to reality, and it is only when we have done so and empirically verified it that we can be sure that our conclusion is materially true.

I wish to guard against being understood by this principle to assert more than I actually am asserting. It is necessary again to emphasise what I have already said concerning the scope of this article. The whole argument is a methodological description of the process of formal reasoning as applied to material reality, and is not a metaphysical essay. In asserting this third principle generally instead of specifically I should find myself involved in a metaphysical scepticism and be at variance with the whole body of scholastic philosophy, which, unlike modern philosophies at present in vogue, is at least sufficiently intelligible and coherent to be treated with respect. I will therefore say at once that I express no opinion whatever on whether or no there is a sphere of certain truth which can be attained by the exercise of human reason. The school-

men (and some of the moderns) think that when by the exercise of reason we have attained certain conclusions, such as the existence of God (I express no opinion as to whether the line of reasoning which leads to this conclusion is valid) which conclusions are not empirically verifiable in the ordinary scientific sense of the word, they can be accepted as absolute truth and that a superstructure can be built upon them. All this I have no intention either to assert or to deny. I merely wish to point out that such a treatment requires a definite metaphysical assumption, or act of faith, whichever you like to call it, and with such I am not concerned. I am treating logic entirely scientifically, as an instrument towards the attainment of what we may describe as empirical truth, and should only be at issue with philosophers if they extended their sphere of certain truth to the ordinary empirical plane.

Indeed to be slightly irrelevant, I may mention that I have on various occasions expressed opinions which go some way to meet their view. I have strongly asserted that such truths as the axioms of mathematics and the fundamental ideas of space and time have truth and validity entirely superior to and independent of empirical investigation. I have pointed out that we fit our empirical truths to our axioms, not our axioms to our empirical truths, and, following Spencer, I have attempted an explanation on evolutionary lines. Nevertheless, those who disagree, and like Dr. Schiller hold that axioms are merely postulates, will not find the difference material so far as this essay is concerned. If they admit that we do in fact reason through universals, it is allowable to hold any opinion concerning the nature of these universals.

What I am wishing to emphasise strongly is that the sphere of deductive reasoning, of formal logic, is not the sphere of empirical reality, and that logical conclusions require empirical verification. Deductions, whether short as in logical reasoning, or long and intricate as in mathematical treatment, are "in the air," and their empirical truth can only be established by subsequent verification. This leads at once to the well-known question whether a logical argument is a guarantee of empirical truth. Of course it is not. This would imply that the concepts abstracted from reality are all that reality, which *ex hypothesi* they cannot be. There may always be some factor ignored or forgotten in formulating the conceptual picture which affects the result and vitiates the conclusion. I cannot see either why this should be a concession to any one or discover who has denied it. If we consider the matter speculatively, the wonder is that logical reasoning so generally leads to materially correct conclusions rather than that occasionally it may give a materially false conclusion.

Having explained these three main principles as fully as possible in the space at my disposal, I now propose to indicate that one or two questions often discussed by philosophers and logicians are laid to rest when this simple description is accepted and thoroughly understood. For example, on the question whether or no formal logic is really worth studying I will merely remark that, apart from a purely theoretic interest, it depends entirely on whether or no we consider process (*b*) of sufficient importance to be worth systematic treatment. The principal difference between myself and Mr. Alfred Sidgwick is that while he thinks the process to be an insignificant and negligible part of thought, I place upon it a higher value. In order for him to substantiate his view of the uselessness and futility of formal logic it would be necessary for him to assert that we never, except in mathematics, perform any deductive reasoning of consequence and that in such as we do perform there is no reasonable possibility that the uninstructed will commit any serious error. I am entirely with him in that he has, in his *Application of Logic*, pointed out the importance of the processes which I have labelled (*a*) and (*c*). Those who think that they are of no consequence will do well to refer to his book. But his estimate of the significance of deductive reasoning and of the truths which he recognises concerning the use of universals is entirely unintelligible to me. Possibly Dr. Mercier's emphatic statement that he really believes in the direct deduction of particulars from particulars may convince Mr. Sidgwick that there is some value in the systematic treatment of deductive reasoning. In spite of our difference on this important point, I think we are agreed in the main on the general nature of deduction as applied to material reality.

Another controversy which I have dealt with on a previous occasion I wish to mention now because it will be relevant when I deal later on with propositions. I refer to existential import. I have never been able to see how formal logicians can find any existential import whatever in the terms of logical propositions.[1] The controversy whether a proposition implies the existence of its subject, its predicate, both or neither, and the very tedious side-issue concerning universes

[1] My view may be described as compounded of Venn's emphatic assertion that, whatever may be the case with ordinary logic, there cannot possibly be any existential import in symbolic logic and Russell's view that all formal logic is symbolic and that the use of mathematical symbols is a mere accident. Dr. Wolf also has arrived at a similar conclusion, though I do not think that either of us agrees with the line of reasoning by which the other has reached the conclusion.

of discourse has occupied so many pages of works on formal logic that it must have had some intelligible origin. What the origin is I have not been able to discover, nor have I anywhere found any sufficient reason for adding to logic a chapter which can so easily be chosen by opponents of formal logic to exemplify their view that logic is a silly and meaningless game. If anyone does not realise the formal character of deductive logic and thinks to include in logical sentences all the nuances and implications of everyday parlance, it is quite intelligible that such a question may arise. To any such it will be a sufficient reply that on this assumption there is no possibility of obtaining propositions with a fixed and limited meaning, and consequently rigid deductions are not possible. Deductive logic vanishes into chaos and valid reasoning with it. So far as I am aware no one explicitly maintains this view and I am inclined to regard the discussion as confusion of thought.

On the hypothesis that deductive logic is formal and that our logical terms are symbols or concepts, no question of existential import arises. Concepts are—concepts, and may be concepts of anything you please, material reality, imagination or nothing at all, in which case the argument is merely form without matter, like the S, Q, P, of the textbook. Obviously the form of the proposition gives no guarantee from what the concepts are abstracted. The subject and the predicate are clearly both existential and both non-existential in precisely the same sense and to the same extent. They are both existential in that the presence of a concept is identical with the existence of a concept. They are both non-existential in that the *form* of the proposition cannot indicate to what (if anything) the concepts or symbols refer. The controversy absolutely vanishes.

The only attempted answer to this argument appears in Keynes,[1] and his argument is that the form no A is B implies the non-existence of A-B. The implication he regards as what I may describe as non-existential import. But this appears to me to be a confusion worse than the last. In the first place it is not import but formal deduction. Also it does not seem to have any bearing whatever on the existence of the *terms*. Again I should demur that the inference can hardly be described correctly as existential. What is really inferred, if we remember the formal character of deductive reasoning, is that A-B is a contradiction in terms. If I start with the proposition that a cat is an animal with four legs and a tail, I prove that a Manx cat is a contradiction in terms.

[1] *Formal Logic*, p. 212.

I do not see that it helps us in the least to say that the Manx cat does not exist in the universe of discourse. On the other hand, to take an A-B combination, it would be interesting to know how the non-existence of a round square gives us any information concerning either the existence or the non-existence of a round or of a square. In formal logic, if you wish to assert either existence or non-existence in any definite sense, you must *explicitly* assert it in the premises.

One other preliminary matter that remains to be dealt with is to show the unreality of the distinction sometimes drawn between formal and material logic. This distinction is not so prevalent now as it was a generation ago, but it is not sufficiently extinct to render all reference superfluous. The distinction between formal and material fallacies is valid because mistakes are possible both in the process of reasoning itself and in the material application of the conclusion. But there is and can be no material logic. All deductive reasoning, whatever the subject matter, must be formal; all application must be material. In any course of reasoning on material questions both elements exist. These two elements should be carefully distinguished, and can be described in various ways. I hardly like calling them deduction and induction. One reason against this description is that the term induction is used in various senses. The old induction by simple enumeration of a limited class and the induction of algebra are really deduction. Moreover, the name induction, bearing this history, is liable to suggest that the process, like deduction, is capable of strict formalisation, which is of course wholly impossible. I have myself described the two processes somewhat loosely as the logic of thought and the logic of science, but do not maintain the terms as scientifically accurate. They are too reminiscent of formal and material logic. The modern description of logic and methodology seems to be the best. The term logic should be reserved for the formalisation of deductive reasoning, methodology for the study of the methods of attaining material truth, which designation clearly implies, what it should imply, that the processes are not capable of strict formalisation. Whatever the terminology may be, however, one thing must be made clear. In all attempts to attain material truth, both elements exist. What has been called induction often contains many deductions small and great, simple and involved. So far as these occur, they are formal in nature and can be described by the ordinary system of deductive logic.

II. Arguments and Verbal Forms.

There is need of a brief section to fill a hiatus which occurs in textbooks of logic and which has seldom been explicitly discussed. It is obvious that systems of formal logic differ from the arguments of ordinary life in that ordinary arguments are various and indeterminate in form. A system must state them in some recognisable form or forms. Therefore there arises the problems (*a*) whether the necessary paraphrase is possible; (*b*) how it can be performed.[1]

Neither of these two questions can I treat exhaustively here, nor do I propose to submit any elaborate proof of (*a*). What I am specially concerned to point out is that before you take a single step in any system of formal logic you make certain preliminary assumptions. I wish to state explicitly what those assumptions are, and I hope it will be clear that throughout this essay I do not in my treatment of logical forms do more than make in a slightly different way the assumptions that any formal logician is bound to make. It is clear and obvious that a *system* of logic, or indeed any exact and scientific treatment, must formalise. Without formalisation the apparent obviousness of an argument is sometimes delusive. A is next to B, B is next to C, therefore A is next but one to C, seems conclusive unless we carefully define our terms, and then, unless we define them arbitrarily with the special object of making the argument correct, it is found to be a non-sequitur. A is a mile from B, B is a mile from C, can easily by careless thought give other than the only valid conclusion A is *not more than* two miles from C. I should be interested to know what conclusion can be drawn from A is near B, B is near C. We must therefore conclude that a distinction can be drawn between a valid argument and a valid form. I do not think we can deny to an argument in which after full consideration we are convinced that the conclusion follows inevitably from the premises the title valid. The argument A is a mile from B, etc., appears to me in that light. But if we stop there and thus make personal idiosyncracy the only test of validity, no system of logic is possible, nor indeed is reasoned argument. An argument is to you or me valid if we think it so, but unless we can state it under some recognised form it must be called formally invalid. It does not necessarily follow that a formally invalid

[1] I gather from Mr. Sidgwick's review in the January number of Mind that Mr. Rieber, whose book I have not read, does actually discuss the question of paraphrase as indeed does Mr. Sidgwick himself in his books. Such a discussion is very rare indeed.

argument is not valid. Any argument can be stated in a formally invalid way. But unless we are able to state an argument in a form generally recognised, there must always remain a doubt whether or no some obscure factor has been overlooked.

Granting the necessity of recognised forms, there follows the necessity for paraphrase, and once again we encounter a process for which no strict rules can be given. Let us take a very hackneyed example. I submit the argument—Socrates is mortal because he is a man and men are mortal. For formal syllogistic validity the argument must be amended to *all* men are mortal, etc. The addition is easily justified. We can say, "Do you *mean* that *all* men are mortal? If the answer is yes, why not say so? If the answer is no, the inference is invalid." Even in so simple a case it is obvious that to obtain any logical form we must take liberties with the words of a proposition as stated in ordinary parlance. Once granting so much there can be no limit to the process so long as the paraphrase does not assert more than the original statement. In ordinary life we should probably say Socrates is mortal because he is a man; and so the process of reducing to syllogistic form, or to any other recognisable form, is still more troublesome. What I am here so specially concerned to point out is that if you are willing in this instance to admit that the universal rule all men are mortal is the real ground for the inference as elliptically expressed, it is not reasonable to object to a similar search for the hidden universal in cases when it is not so obvious. Also it is clear that the necessary paraphrase must sometimes extend so far as to supply a proposition which the original argument entirely omits.

Paraphrasing, therefore, theoretically, presents no difficulty; practically, should logic be used to test the validity of ordinary arguments, it is a very important element, and, moreover, one in which many errors are likely to occur. This subject is worthy of extended treatment which it is not possible to attempt here. But the few remarks made in this essay may answer one or two objections that have been made to traditional logic. By clearly recognising that syllogistic logic is formal and that ordinary arguments must be paraphrased into syllogistic form, we cease to be surprised that ordinary arguments do not assume this form, and that the syllogism is not the most natural form of expression. Rule of thumb is always more natural than scientific work. The old-fashioned nurse naturally prefers the elbow to the thermometer. For practical purposes it would be pedantic to attempt to reason

in syllogisms. It is only when a doubt arises whether some argument is invalid that it is practically desirable to express it formally. Then it often would be of great service. In everyday reasoning it not infrequently happens that absurd arguments are put forward which arise from the unconscious assumption of concealed universals which would be repudiated by the authors if explicitly stated. Thus it happens that the most important item in the paraphrase is often to supply the universal which, in common parlance, is often not expressed at all. Also, in common parlance, several steps in reasoning are often merged into one and it is then necessary to disentangle them. Considerations such as these are, in the ordinary treatment of logic, implicitly assumed. I have thought it desirable to state them explicitly.

One other corollary that follows from the admission that paraphrase is allowable, is that the distinction between the various forms of universal propositions, categorical, hypothetical, modal, etc., must be regarded as irrelevant to formal deduction. As I have previously pointed out, when we translate the verbal form of everyday argument into symbols, which is exactly what the formalisation of an argument implies, the nuances and shades of meaning of common parlance disappear. For symbolic purposes the phrases: all men are mortal, man is mortal, if A is a man he is mortal, are identical. The hypothetical may at first sight seem to mean less. But the symbol A implies that whatever is substituted for A is included in the predicate; therefore for symbolical or formal purposes it is identical with the ordinary categorical. There is ample room for the discussion of the delicate shades of meaning which may be implied in the various forms of speech, but it is necessary to state emphatically that formal deduction can take no account of them. Here, again, as in the discussion of existential import, it is important to realise that formal deduction can be made only from what is explicitly stated. Neither existential nor any other import, except that which is formally stated, can have any place in a system of logic.

III. The Syllogism.

I think it will now not be necessary to labour the conclusion that every valid argument can be expressed as a syllogism, indeed that every argument, valid or invalid, can be expressed in the form of one or more syllogisms. This follows from the two principles already laid down (*a*) that every argument implies the assertion of a universal; (*b*) that for purposes of

formal logic any paraphrase is allowable which does not assert more than the implied universal. Any universal can therefore be expressed in the form, all A is B, or, no A is B. Making the universal the major premise, the minor premise is usually apparent and the syllogism is complete. If the argument is false, the error may either be formal or material, formal if the figure and mood are invalid, material if the premises are false or ambiguous. The statement here made must be clearly understood. It is that any argument *can* be expressed syllogistically. It does not assert that the syllogism is the most natural form. It does not even assert that the syllogism is the best form for the particular argument. But it should be noted that what is asserted is all that is required for the purposes of formal logic, namely, to supply a mode or form in which all valid arguments can be stated. As previously argued, there is no reason why the form should seem natural nor why it should not, from the point of view of everyday custom seem strained. Its object is to formalise and verify, not to displace ordinary rough and ready argument.

Taking the syllogism as the primary form, it is desirable to investigate the question whether, like the great bulk of everyday arguments, the syllogism itself, in its very form, does not contain some hidden universal. If it does so the universal should be explicitly stated and should be clearly grasped as the principle that lies behind all valid reasoning. Fortunately traditional logic has treated this subject fairly exhaustively and has based the syllogism on the *dictum de omni et nullo*. The principle has been expressed in various forms. A very common one, that of Keynes,[1] is: "Whatever is predicated affirmatively or negatively of a term distributed is predicated in like manner of everything contained in it".

This form is fairly satisfactory but I propose to improve the wording. It is neither elegant nor strictly correct to say that anything is contained in a term. I will therefore state it as follows: "Whatever is asserted distributively of any class is asserted of every member of that class". Stated in this simple form I am unable to see the least difference between asserting or predicating distributively of a class and asserting or predicating the same thing of every member of the class. The principle, when reduced to its simplest form, seems to me to be a tautology. I do not propose to dogmatise on this point. If the statement is a tautology the syllogism contains no hidden universal, and the major premise is the only universal involved. If on the other hand there is a universal

[1] *Formal Logic*, p. 301.

hidden in the form of a syllogism, it has already been asserted and is so obvious as to appear very like a tautology. Either conclusion will suit the argument of this essay very well.

A side-issue arises here that should be noticed. I think that some logicians have been loth to admit that the *dictum* is a tautology because of the impression that it necessarily follows that the syllogism itself is tautologous. But with this inference I do not agree. Whether or no a syllogism gives new information depends entirely on the particular syllogism.

E.g., all the planets are bodies which revolve in or near the plane of the ecliptic—Saturn is a planet.

Therefore Saturn is a body which revolves in or near the plane of the ecliptic.

This syllogism is undoubtedly tautologous because the major premise or universal can only be obtained by simple enumeration. Until we have by observation discovered the path of every planet we are unable to assert the universal. Even on the nebular hypothesis we can only postulate on antecedent probability, and, as is well known, the orbit of the Moon is in a different plane. There is therefore nothing in the nature of a planet which necessitates that it should revolve in any particular plane. On the other hand the hackneyed example :—all men are mortal, Jones is a man, therefore Jones is mortal—is in a different category. Assuming Jones to be now alive the deduction is as yet unverified so far as he is concerned. In any case the premise cannot be established by simple enumeration because there are a considerable number of men now alive. The only possible ground for the assertion of the universal is inferential and must take the form that there is something in the essential nature of humanity which is mortal. This is called by many logicians a modal proposition. Man as such is mortal. My contention is that only a syllogism of which the major premise is modal can give new information. All others are tautologous.[1] Certainly it is not allowable to make the dictum appear less obvious than it really is in order to attempt to give to some syllogistic deductions more reality than they possess.

The absence of a concealed universal which can be clearly distinguished from a tautology is one good reason for doing what is being done here, taking the syllogism as the primary form of reasoning. In so doing I do not assert that it is impossible to invent an alternative system or systems. There may be a certain arbitrary element in the choice. But at

[1] This is in agreement with Coffey.

least it can be said that no alternative system has been invented which has similar advantages or any approach to similar advantages.

The following additional reasons for accepting the syllogism as the standard mode of formal logic will show how much has to be accomplished by anyone who seeks to displace it by any other system or systems.

(1) Every deductive argument can be expressed in syllogistic form, that is, stated in one or more syllogisms.

(2) Every valid argument contains within it, expressed or implied, a universal. Every syllogism contains a universal. There is, therefore, though no necessity, an antecedent probability that the syllogism may contain the universal really implied in the argument. If the paraphrasing is carried out with judgment the syllogism *will* contain some form of the universal implied by the argument.

(3) The syllogism is the traditional form of logic. If it is desired to change the tradition, the burden of proof lies with those who advocate the change. So long as the syllogism will do all that is required of formal logic the change is unnecessary. Unless some other system will give equally good results in a simpler manner, the change is harmful.

IV. Other Logical Forms.

The point has of late been raised that for some arguments, apparently very obvious, and undoubtedly true inferences, the syllogism is not a natural form. Indeed it has been suggested that the universal expressed as the syllogistic major premise is "faked". I think I shall be able to show that in every case there is a principle involved, a real axiom. The objection that the syllogism is *unduly* strained and unnatural I propose to meet by a method which is, so far as I am aware, original. I suggest that a few other forms be recognised. These forms I shall designate as subsidiary and shall derive them from the syllogism.

Before so doing it is desirable to refer to the only alternative suggestion contained in textbooks of logic and give reasons for not accepting it. Keynes[1] regards the essential difference between the syllogism and other logical forms as a question of the copula. According to his view the syllogism is the form with the copula "is". The treatment of forms with some other copula he calls the logic of relatives, of which he regards the syllogism as a particular case. This treatment I believe to be fundamentally unsound.

[1] *Formal Logic*, pp. 385-388.

The reason will be apparent to those who have grasped the second section of this paper. Whether you express a proposition A – is – greater than B, or A – is greater than – B is entirely a matter of convenience. By all means let us call the verb to be a copula if it is necessary to name it. But it is foolish to think that we make any difference either to the content of a proposition or to the inferences that can be drawn from it by drawing straight lines in different places. The term *is greater than* undoubtedly implies a certain relation between the entities placed before and after. Also the inferences that can be drawn depend upon the relation. But we can only discover what those inferences are by considering the meaning attached to the words, in short, by examining the particular proposition. This cannot be attained by any mechanical juggling with the words of the copula. Assuming that there are a number of reasonably possible logical forms of which the syllogism is one, the form of the copula appears to me to be an entirely illegitimate differentia.[1] The essential nature of a proposition is that something is predicated of a subject, and anything predicated can be expressed with the verb to be as the copula. No other so-called copula can be universal, any other merely expresses a special relation. The designation of such as copulæ is misleading.

In the manufacture of subsidiary logical forms it is essential to note one peculiarity. In the form of the syllogism, if we agree that the *dictum* is a tautology, there is no assumption of material truth. It is purely a form and the truth of the conclusion depends solely on the particular premises employed. Every other form, unless it be the syllogism in disguise, implies, in addition to its premises, the assertion of some universal as absolutely true. It consists in short of an elliptical argument of which the major premise is omitted. "Jones is mortal because he is a man" can well be taken as an illustration of what these arguments really are. The formal recognition of arguments such as these can be justified only by common usage and only then when the universal is so obvious, so ingrained in the nature of thought itself, that continual explicit assertion is pedantic. For this very reason it may sometimes be difficult to express it and occasionally it takes careful reflexion to see that an assumption exists. It will now be convenient to treat two or three seriatim.

(*a*) *Hypothetical Syllogism.*—The name is unfortunate because it is neither hypothetical nor a syllogism. As explained previously there is a sense in which every argument

[1] Keynes here refers to Venn's *Symbolic Logic*, but I believe that most modern symbolic logicians treat the matter in an entirely different way.

is hypothetical, apart from this the hypothetical form is an illusion. It is not a syllogism because the major premise is not explicitly stated and because a term of the minor premise has irrelevantly become entangled in the elliptic statement. Yet the argument, in cases where it is real instead of nominal, is essentially the same as the syllogism and it is not easy to think of a better name. As previously explained for purposes of formal logic, the form if A is B it is C implies merely that anything which is B is C or all B is C.[1] The more complex form if A is B, C is D, asserts in other words that all instances of A being B are instances of C being D. There is no need to elaborate the treatment of this form. Jevons'[2] analysis, which Mr. Sidgwick has also found in Whately, is perfectly sound. Instead of reducing the hypothetical to the syllogism it is merely required to reverse the process. Unless the form had already existed and been recognised by common usage the derivation would not have been desirable. If this animal is a mammal its backbone is jointed, merely implies that all mammals have jointed backbones. It also gives the irrelevant information that a mammal is an animal, and in addition, wastes space and attention by mentioning a particular animal about which it makes no specific assertion other than that it is an animal, which is irrelevant. The universal is implied but not clearly expressed. The only ground for the recognition of this form is found in the fact that it is traditional, and in that careless reasoners in common life do often express themselves in forms bearing some resemblance to the so-called hypothetical. When they do so they are liable to commit the common fallacies of denial of the antecedent or assertion of the consequent. There is therefore something to be said for the recognition of a logical form to classify and guard against these fallacies.

(*b*) *Substitution of Similars.—Axiom.*—Entities that are respectively identical with the same entity are themselves identical.

Paraphrase and Introduction of Symbols.—Entities – A, C –

[1] There is an apparent exception to this rule. I might say, "if *that* bright object is not a star it is a comet". This implies that all objects having certain undefined peculiarities indicating amongst other things that they are beyond the atmosphere of the earth, are either stars or comets. The real universal is then not all B's are C's but all B's of a certain class are C's. Such an argument is almost too elliptical for formal treatment in that the ground of the inference is a very complex and unexpressed analysis of B's. It is one of the disadvantages of this form that it can so easily include arguments of very different types.

[2] See chapter in *Elementary Lessons.*

which are (identical with) the same entity B – are (identical) – A is C –.

Form.—Note that the words in brackets are omitted, and that the relation of identity equivalent to the Hamiltonian form, all A is all B, implies that the relation can be written either way.

B is A ; B is C ; therefore A is C.

Example (taken from a previous discussion in this journal):—

St. Paul's is a cathedral church
St. Paul's is a church that Wren designed

therefore a church that Wren designed is a cathedral church, or Wren designed a cathedral church.

The axiom is very obvious indeed, but it should be noted that it is not a tautology. However clearly it may be implied that two things which are identical respectively with another are themselves identical the two assertions are different, therefore the axiom is a true axiom. The axiom is, however, so very axiomatic that once stating is sufficient and so the form is justified. A further justification of the form is found in the fact that arguments of this character are very common in ordinary life. If the explicit recognition of a subsidiary form is ever needed this is undoubtedly the instance which best illustrates the utility of the device.

(*c*) *A Fortiori.*—The previous exposition will have cleared the ground, and so it will not be necessary to devote much space to this example of reasoning. I am here mainly concerned to point out two things : first, that there is a real universal involved, and second, that the apparent obviousness of the inference from particulars, though accidentally true in this instance, may be very delusive. As previously explained the *a fortiori* is a relation, and each relation must be examined separately and its implications discovered. It is impossible to express them in a general form. Let us take as our two premises the following :—

A has a specified relation to B
B has the same specified relation to C.

Clearly no inference is possible. We can only enquire what relation is meant and reserve inferences until we have *thoroughly* examined the particular relation and discovered the universal through which we are reasoning. There are a considerable number of relations which when substituted for the general form will give as an inference A has the same relation to C. There are a much larger number that do not. In a specially obvious case it is easy to allege that there is

no universal at all and that we reason only from the particulars given. The only possible reply is that if we do so we reason wrongly, and that any such inference is invalid. It is quite easy by such a type of reasoning and by a similar exercise of uncritical common sense to make a bad blunder. The following will illustrate. Let us take as our definition of East or West the particular meridian of longitude, and ignore small differences of latitude, which definition is in accordance with common usage, and consider this inference :—

Bristol is West of London,
Penzance is West of Bristol,
therefore Penzance is West of London.

It seems an obvious inference but it is entirely wrong. It is certainly true that, according to definition, Penzance *is* west of London. It is also true that the fact is a possible inference from the relative positions of London and Bristol, and of Bristol and Penzance, *if sufficient data be given.* But it does not follow from the premises. The real universal is complicated and I do not propose to unravel it. That the inference is *formally* wrong will be seen by the following :—

London is West of Yokohama,
San Francisco is West of London,
therefore San Francisco is West of Yokohama,

which is, of course, not true. The only manner of establishing the true inference from relations of east and west is to formulate the universal and see whether the apparent obviousness remains obvious when this is done.

The universal implied in the *a fortiori* I will say at once is to me entirely obvious. At the same time universals which seem to me equally obvious have been denied by competent mathematicians and logicians, and I see no reason why some one in the future should not deny even to this the attribute of absolute truth. What is assumed is that, as we ascend the scale of size, the scale is continuous and irreversible. Anything which is greater than another is greater than anything than which the other is greater. This axiom at the present time no one will dispute. But it does not appear to me one iota more obvious than the corresponding property of the scale of distance. Assuming that we start from any point in a straight line and continue in the same straight line it seems axiomatic that we get further and further away from our starting-point. Now this inference Mr. Russell denies, because he thinks it theoretically possible that space may be circular or elliptical. Why should it not be equally

possible for some ingenious mathematician to deny the *a fortiori* and found a new branch of mathematics involving skew numeration or a metageometry of number corresponding to the present fashionable metageometry of space? Of course I should think the development very absurd, but then I hold precisely the same opinion of present-day metageometry. I am putting forward this idea, not because I think it reasonable, but to show that the universal behind the *a fortiori* is a real assertion of something and a denial of something else. What we assert in the *a fortiori* is that the relation of number (and others grouped in the term greater than) is not a relation like East and West or like what Mr. Russell thinks distance in space may be.

Having made that point clear, the formalisation is simple. I will ask all to bear in mind what has been said about paraphrase. Without this assumption no logic is possible. Granting this the form will be derived as follows:—

Axiom.—All things which are greater than any particular thing are greater than those which it is greater than.

Paraphrase.—All things (A) which are greater than a particular thing (B) which is greater than a second (C) are greater than the second (A is greater than C).

Form.—When A is greater than B and B is greater than C, then A is greater than C.

(*d*) *Other Examples.*—It is now superfluous to say much about other relations. Clearly they can all be treated in the same way. If this method were carried out, you could establish as many forms as you pleased. Every separate relation must have a separate form. It is possible that, by classification, the number might be reduced. What I mean is, that if any new relation be contemplated—say A is less than B, etc.—two processes would be possible. It is theoretically possible to show that a new relation is a particular case of an old one, in which case it would be classified under a subsidiary form already established. The substitution of similars, based on the principle of identity, might be made to include a number of minor relation which assert not absolute identity, but partial identity. The euclidean axiom of equals is a cogent example. Also the *a fortiori* in that it has a number of significances, to all of which the fundamental universal applies, might be extended to include a number of relations. The greater than, and the less than, in that the one implies the other, might be amalgamated.

This is probably the grain of truth that lies behind the idea of the logic of relatives, namely, that a number of relations can be classified together. But, from the standpoint of formal

logic, this is not a *logic* of relatives but an examination and classification of relatives. It is in short an elucidation of axioms and a series of assertions concerning material truth.

Apart from a possible amalgamation only one process is valid, namely, to consider the relations separately and to elucidate exactly what is implied by each. Having done this express the implication as a universal; then manufacture a form which will be available for logical purposes. It seems entirely unnecessary to put forward other examples. Also, it will be seen that there very soon ceases to be any advantage in departing from the syllogistic form.

With the subsidiary as with the primary or syllogistic form, all the characteristics of formal reasoning as here described hold. The subsidiary form differs from the primary or syllogistic form in that it assumes some definite universal as absolutely true. In so far as it does this it is at a disadvantage compared with the primary. Nor does it appear that it can exist without the *dictum*. If what is predicated generally by A, B, C is not also predicated of anything we can substitute for these symbols no inference is possible. Whether or no this be so, it must be clearly emphasised that a subsidiary form, in that it is a form of reasoning, is conditioned by all the limitations of the primary form. The abstraction from reality, the paraphrasing the necessity for empirical verification, equally apply.

V. Conclusion.

It is now desirable briefly to sum up the conclusion of this article. It would be easy to magnify the importance of the section which is most original, namely, the derivation of subsidiary forms from the syllogism, and to lay claim to having made a great discovery. Considering the volume of discussion from all schools of logicians which has centred about one or two erratic forms, I certainly think the suggestion worth a place in formal logic, but I do not wish to exaggerate its importance. Its value seems to me to be found in the support it gives to traditional logic rather than in the addition that it makes thereto. The last thing that I should wish would be to see that item unduly developed. Possibly later on I may indicate just how far I think it should be developed and where it should stop.

So far as that section is concerned its value is twofold. On the one hand it indicates the possibility of forms other than the syllogism existing and serving a useful purpose; on

the other hand it shows how fundamental in the process of reasoning is the syllogism, and elucidates more clearly than has been shown before exactly what is meant by the continual assertion of so many generations of logicians that all true reasoning is syllogistic. The view has been expressed so often, and is so very traditional, that it is liable to be asserted mechanically without adequate comprehension of what it really means. Indeed in this conclusion I propose to go a step further than I have gone in the discussion of the details. Throughout the essay I have left it an open question whether or no the order indicated here is the right order. I have done so knowing that formally or symbolically it is possible to create various orders, and to classify the syllogism as one of a number of valid modes. But although I have not insisted on it and do not claim to have proved it, I think it well to say here that I *do* think that the order here suggested, the syllogism primary and other forms secondary, is *the* right order. I do, moreover, claim to have shown that the other forms *can* be derived from the syllogism, and that their existence is no disproof of the traditional view of syllogistic reasoning. I have also, I think, shown clearly how strikingly the syllogism exemplifies the necessary and fundamental characteristics of reasoning.

Important as these matters are, it is not these particular features that seem to me, in the present state of logical discussion, of the greatest significance. What has always struck me about the present state of logical theory has been its confusion on fundamentals. Logicians never seem to have made up their minds whether or no logic was a formal science or in what sense. Sometimes after emphatically asserting that it is formal they will include elements which are clearly inconsistent with their starting-point. It is this topic with which I am specially concerned.

I have tried to show that there is a sense in which all deductive reasoning, whether the rough and ready product of ordinary life or the more exact deductions of logic and mathematics, is and must be formal. The truth is more readily seen in mathematics, because in that science the chain of reasoning is long and involved and a continual series of formal deductions can be made without intermediate reference to empirical reality. This element of mathematical reasoning I have explained on several occasions with the special object of showing its limitations. In logic it is equally important to emphasise this truth but for a different reason. In everyday life and ordinary argument the various elements are so entangled as to obscure the essential characteristics of reasoning.

It is thus all the more important that logic shall emphasise the aspects which the average man is liable to overlook. A logic which imitates the confusion of ordinary parlance and entangles the various elements of deductive thought and empirical reference is neither sound theory nor efficient practice. Valid logic has room for all the elements which appear in logical discussions, but only if we clearly realise exactly what we are doing at each stage. As a starting-point it seems to me essential clearly to grasp that deduction is formal and that a logic of deduction must be formal. The recognition of this characteristic carries with it certain corollaries, and nothing tends so much to confusion as the non-recognition of the implications involved in the assertion of the formal character of logic. If logic is formal it *is* formal and all non-formal elements must be excluded from this particular phase.

It is hoped that this essay will help to show in what sense the formal science exists and to indicate both its uses and its limitations. No doubt its sphere is not so great as its most extreme advocates have contended, yet it seems to me much more significant than its opponents have realised. What has made attacks so easy and so formidable has been this confusion among logical thinkers. Once they have clearly realised what exactly are the distinct elements of logic and methodology and when they are dealing with neither but are straying into metaphysics, some of the problems now so widely discussed will settle themselves. I am not deprecating metaphysical discussion as such so long as it is clearly recognised for what it is, but at least let us keep it as distinct as possible from what should be a science which can exist with the minimum of metaphysical assumption. Similarly the standpoint of the present essay is diametrically opposed to those who seek to establish a psychologic. The term to me is meaningless, as meaningless as psychomathematics. The essential nature of deduction is that it is largely independent both of metaphysical discussion and of psychological details, and is the same for all. This character will be clearly recognised when the various elements of what to-day is known as logical theory are disentangled. The present essay is intended to do something to achieve that object in that it clearly distinguishes formal deductive logic from the diverse elements and metaphysical discussions with which it has been associated.

IV.—DISCUSSIONS.

"THE BASIS OF BOSANQUET'S LOGIC."

In view of Mr. L. J. Russell's paper in the October Mind, I should like to explain what I meant in my *Logic* by speaking of a reference to reality as involved in all hypothetical judgments.

I am the more desirous to do this, because I may have contributed to some misunderstanding by the length at which in that work I pursued some discussions which were really subordinate, though illustrative of the main contention, and to me extremely interesting.

After briefly setting aside the references to four of these discussions, I believe that I shall be able to state shortly what I take to be the fundamental difference between Mr. Russell and myself on the main issue, and to justify my position.

i. I discussed at length the question how far an affirmative hypothetical judgment asserts the existence of an object corresponding to the idea which stands in the place of a subject to it; *i.e.*, whether the judgment is false if or when no such object exists. This is the discussion (*Logic*, i., 181 ff. and on part of p. 273) referred to by Mr. Russell, pages 441-442 and 444. It suggests, I think, to Mr. Russell that the important question for me is "whether the antecedent exists in fact" (444). But this was for me a question, I might almost say, of curiosity and the use of language. A supposition is illegitimate—I sharply distinguish the case—not if the antecedent is non-existent, but if its nature is such as would destroy the system indispensable to conceiving it—the system which I may call the surviving reality, *i.e.*, the reality which in normal cases persists beside the modifying supposition. The examples criticised on page 447, such as that of a moral being alone in the universe, are instances *ad hoc* of this relation, and are not illustrations of my general argument. They follow on the discussion of the existence of subjects (*Logic*, i., 273). I am distinguishing between a supposition which replaces a subordinate element in reality by another, and an "impossible content" which shatters the system, which it implies, into unintelligibility. This distinction, I think, meets Mr. Russell's point that a completely determined actual system must reject *any* supposition whose antecedent does not exist (444). I only require the supposition to be conceivable, not to confine itself to an existent antecedent.

ii. I discussed at length whether a relevant factor of the

premisses of inference could be omitted in the conclusion (*Logic*, ii., 11, Mr. Russell, p. 446), and pointed out that in the case of supposition though "we seem to exert inferential activity," yet we cannot draw a conclusion which will stand by itself, as we do in syllogism. All I meant was that the two results of the inferential activity seem to need to be brought into line. I did not connect its reality with the reality of the ground. I inclined to the conclusion that our practice in syllogism is what needs revision. But my expression was misleading and I regret it.

iii. I discussed whether inference in a quasi-syllogistic form [looking as if it were subsumptive] could at the same time be apodeictic, and I concluded that it could. If it were to be taken as truly subsumptive, I think I was wrong. The apodeictic insight would exclude the subsumptive relation, although it remains true that the factual nature of the system would raise no difficulty in the way of the former. I was urging that the factual reality of the ground does not interfere with the necessity of the conclusion; not that it is essential to it.

iv. I may add that I do not now restrict myself to *de facto* teleology as the highest ground of inference. It is, I think, a very strong case of knowing the nature of an object from the inside. It illustrates Croce's principle of *verum factum*—we know the truth of what we have made. But I do not accept that principle as universally true, and certainly not as the exclusive account of truth. I ought never to have taken the case as more than an illustration of very full knowledge.

I think that from these four discussions Mr. Russell has gathered an idea that the relation to reality which I hold to be involved in inference from supposition has to do with the real existence of the content supposed as antecedent, in the hypothetical judgment which draws the inference. "On his premisses," he writes, "if the judgment is to be genuine the new matter must be real" (445). "The result, then, of Bosanquet's theory is that only the real—the actual, the existent as truly interpreted, can have being in the strict sense, and can form the subject of judgment" (436). The "new matter" is, as I understand, the matter which is supposed in the antecedent of the hypothetical judgment; the clause which is introduced with "if". To my mind this is irrelevant.

2. Now where I admit that Mr. Russell does traverse my essential argument is first in the anticipatory statement on p. 437, "in his account of the element of fact in judgment we shall find a transition from 'posited system' to 'real system' depending on arguments which we shall have to reject"; and in the argument in support of this statement, beginning with p. 446 and the footnote, and continuing over the three following pages. I quote from p. 448: "We should, therefore, conclude that every judgment is relative to some system, whether real or supposed, which is sufficiently complete to render the judgment necessary; for we hold that it is possible to construct various systems of this kind without finding

it necessary to draw on any unspecified portions of reality. If we specify the precise portions of reality on which we are drawing, then not reality, but the system we have specified, is the ultimate subject of our judgment." The last sentence is particularly noteworthy, and we shall find it, I think, untenable.

Mr. Russell thinks that you can draw conclusions from contents which are merely "posited" (supposed), and that they need neither be real (I disclaim saying that they need be) nor have any basis in reality. Here, I join issue. For him, the only question is whether you suppose *enough* to make a whole which is sufficient as a basis for your judgment. (Footnote, p. 446 and pp. 447-448 especially *l.c.* and, commenting on my instances of illegitimate suppositions, "*in all these cases we are not supposing enough*". His italics.) If you suppose *enough*, you need borrow nothing from actual reality, and your judgment does not depend upon it in any sense or degree.

Now my primary answer, which is given I may say in the whole structure of my *Logic* and notably in the discussion of supposition and of the basis of the hypothetical judgment (i., 266-267, 271-272) can be stated in four words. Judgment *must* transcend supposition. It is so simple and fundamental a matter that it is, certainly, difficult to explain further. It is a question of the distinction between two absolutely incompatible logical functions.

Make a supposition, as complex as you please; say, consisting in the total rules of a game like chess or noughts and crosses. Put into it everything you think necessary to determine the consequences you mean to draw. So far, of course, you have no affirmation, you have only a very complex antecedent of a hypothetical judgment, without any consequent. So long as you are merely supposing, the data or contents you suppose, one might say, lie dead side by side. They do not combine or affirm anything about anything; they do not modify or confirm one another or exclude one another or the consequences of one another.

But now make a judgment, draw a conclusion, affirm consequential bearings of one supposed element on another, *e.g.*, that given certain suppositions, certain alternatives are possible or impossible. It is clear, surely that now you have done something quite new. You have, so to speak, infused the life of reality into your suppositions. It is like the nursery story, "The cat began to bite the rat"—the train of consequences begins to affirm itself. The contents of supposition wake up and begin to operate in the spirit of the laws of identity and non-contradiction. You begin to infer from the joint world of supposition and reality as in categorical inference you would infer from the real given world. You are drawing, that is, on the whole of what is in reality, of what may prove to be relevant anywhere in the universe, to sustain your conclusions, and you are challenging it to contradict them. Your supposition when it has been allowed for can draw no magic circle by which anything further in the universe can be barred out.

In other words, every judgment is inherently absolute. "How so, when we are expressly speaking of such as are conditional?" I answer, it is just the explicit condition which makes the judgment as such absolute. The explicit condition, by being stated, is discounted or transcended. It exhausts the conditionality of the assertion. When it has been allowed for, then, we are *ipso facto* saying, there is nothing else in the world that can interfere with the truth of the judgment. We are postulating, that is, that, whether all the ways are known or some not known, in every relevant way the universe supports our judgment.

If this were to be denied, as I hardly think it can be, it would no doubt be difficult to prove. One would have to appeal to the obvious implication of the judgment form. If there is anything necessary to its truth (or any hindrance to its truth), then that we intended either to insert (or to remove) in the explicit formulation of its condition or to postulate as the indispensable belonging of such a judgment. Otherwise we could not propound the assertion as true. Its truth would be liable to be interfered with by some just cause or impediment. Every one would admit, I suppose, that if a condition could be pointed out indispensable to the truth of our judgment, but unspecified in its explicit antecedent and not otherwise guaranteed, the uncertainty of such a necessary condition must make the judgment doubtful. And this establishes the point that when conditions are specified and conclusions drawn from them, the resulting affirmation presupposes *all* conditions, known or unknown, indispensable to its truth, and therefore claims a support from the real universe which cannot be measured or limited.

Now an indispensable condition of a conclusion from any world of contents is at the very least what I have called the life of reality; that is, the unity which constitutes a world, typified by the laws of thought, and by all such characters and categories of reality as may be employed in the suppositions in question. Mr. Russell manages to rule out space and time from the antecedents in the game of noughts and crosses; and more easily we can rule out the existence of persons able and willing to play the game. These reductions are quite feasible; but it is significant that they *are* subtractions from the natural implication of the supposition, and that they are necessary if we are to get conclusions from it without the most obvious dependence on reality. But still we should have to recognise as a basis the "laws of thought," *i.e.*, the coherent life of the universe, and at least the most formal properties of things, identity and distinctness and the rest, on which I think it is admitted that all mathematical truth reposes.[1] And perhaps more properties are involved than these. Perhaps the numerical system is not completely (though it may be provisionally) conceivable apart from distinctive quality, nor this, again apart from the whole concrete universe. In any case finally, when we have drawn a conclusion from anything

[1] Whitehead, *Introduction to Mathematics*, chap. i.

about anything, we have demanded support and challenged contradiction from anything relevant that the universe may anywhere contain.

I am exceedingly interested in the way out of this reasoning which Mr. Russell adopts. Dozens and dozens of times I have tried it myself. And of course I do not say but that he may succeed where I have failed. I will tell my story, and the reader must judge.

He urges, I "have not supposed enough". If your suppositions cover all you want to determine your object, then you can draw your conclusions from them without appealing to actual reality. This is so, we are told, in geometry (p. 446, footnote, *cf. l.c., supra*, "A genuine supposal if completely expressed must stand the test of self-containedness".

Here I always found two difficulties.

First, in principle, can any perfection of self-containedness cancel the contrast between supposition and judgment? Is it not inevitable that whereas the supposition "stays put" as you took it, the judgment, in virtue of the very spirit and laws of thinking, appeals to confirmation or challenges contradiction by whatever may be relevant in the universe?

Secondly, the manœuvre by which Mr. Russell tries, as I have often tried, to escape from this necessity, inevitably, so I have always found, brings one back to the ordinary partial supposition, obviously based on a surviving reality which it modifies.

The manœuvre is this (see *l.c., supra*, from p. 448). You note certain factors of the real universe, of the nature of things, such as the "laws of thought" and the formal properties indispensable as the basis of mathematical reasoning, and probably other characters, according to the nature of your inference, together with the general assent or non-contradiction of the real universe. All this you may *include in your supposition*. Then you go on to say, "Now my supposed world *is* a world by the hypothesis, and works as a world, for I have supposed the life of reality to be in it. And it cannot fail to work as a world, for, tell me any character of the real universe which you think indispensable to my inferences, and I will include it in my supposition. So that my supposed world *must* include in itself, without any general appeal to reality, all of reality that is necessary to my drawing my inferences."

But at this point in the manœuvre it used to occur to me, "but can I really transform the function of supposition into the function of judgment by increasing the complexity of the former?" And it would seem on scrutiny that now, under cover of supposing, I am really recognising and postulating. I am ostensibly including in my supposition certain elements of the real universe; but I do it, not because they are factors indispensable to the unique determination of the imaginative structure which I am creating, but because I recognise them as elements of reality which, very likely along with others of which I am not aware, are implied in the

function of judgment which is the operation by which my conclusions are drawn.

Therefore, after all, in trying to suppose *enough* I have only set myself a task which cannot be achieved by supposition. My ostensible supposition falls into two parts. First, there is the side of genuine and normal supposal. I am positing such rules or data—wholly arbitrary so far as fact is concerned—as I desire to consider in their consequences and to make the basis of my game. As Prof. Hobson, I think, has said, and Mr. Russell implies, a science such as mathematics may be looked at as just such a game. But then secondly there is the element of what I should venture to call abnormal and controversial supposal. I am including in my supposition, of *malice prepense*, those factors of the real universe which I recognise as indispensably implied in the function of judgment when occupied in drawing the consequences of such a world; factors which it would never occur to me *bona fide* to include in the determining rules of my game, such as the laws of thought and more or less of the properties of real things, together with the general condition of favourableness on the part of the universe in matters which may be unknown to me.

Now this second factor of so-called supposition is not genuine supposition. It is recognition or postulation. It is not, in such a case, on the basis of my supposal that I am inferring. If it were, I could suppose these factors to be otherwise and modify my inference accordingly. But these factors I cannot suppose to be otherwise for they are the basis of implication, and if I did I could draw no inference at all. They are the implications *ad hoc* of a function —the judgment—which as we saw, makes an absolute claim to be true of the real universe when its conditions are once accepted.

It is the same case as if we tried the same manœuvre with any single partial supposition, by supposing, say, that I go to town today and act in a certain way, and then further professing to *suppose* that the world goes on otherwise as usual, and nothing happens to interfere with my acting in the way first supposed. It is obvious that the second part of the so-called supposition is an appeal to the actual nature of the world, apart from which and unsupported by it the earlier portion could give no result. Our attempt to suppose *enough* has resolved itself into just such a spurious extra-supposition. It is parallel to the postulate, on which every conclusion from inductive experiment depends, that the huge unknown environment, which no possible contrivance can exclude, is irrelevant to our inference, or, if relevant, favourable. These are not suppositions, but assumptions about reality, and to take them as absolute is indispensable to making judgments which claim to be true.

I believe, therefore, that this way out is a cul-de-sac. However plausible it may seem, there are two ultimate difficulties which cannot be got over: (i) Whatever suppositions you may lay down, you can use none of them to draw conclusions except by a function

of judgment which brings them into relation within reality. You could not reject a self-contradictory supposition by *supposing* the law of non-contradiction. The one *qua* supposition is as good as the other. It is only when you come to judge of reality that you are compelled to employ the law of non-contradiction as ultimate, whether you have supposed it or not.

(ii) Every judgment, just because, after its conditions are made explicit, it is absolute and universal in its challenge to reality, is conditional on the unknown. It asserts itself to be unconditional, but obviously, for this very reason, its truth depends on the absence of hidden obstructions in the universe of unknown reality. Every judgment must transcend supposition.

"And hence," Mr. Russell says on page 445, "not reality, but some form of reality as modified by the supposition, would be the ultimate basis of such a judgment." I agree to this, and I do not see that it involves me in any difficulty. The suppositions are explicit; "the surviving reality" is to some extent known, or I could not use it in judgment. It operates as a universal in the new matter of the supposed content which is read as one case with it, as Mr. Russell has described on pages 444-445. Why should it not? Only because I am supposed to hold that the new matter must be "real". But I have explained that I do not hold this. What I do hold is that the "new matter" must be intelligible in connexion with a real system, because, if not, you cannot judge about it.

Thus from my point of view it is not correct to say that "the exploration of a relational system must take the system in some one particular setting" (437). This assumes that you can establish relational systems pure and unattached, and then move them about from setting to setting. It is not setting, but indispensable basis that my view demands; or setting, if you like, *qua* basis and indispensable to the system. You can only judge a relational system, *e.g.*, draw conclusions about the alternatives it permits, on the basis of the reality which survives in it, including at least "the laws of thought," *i.e.*, the ultimate factual characters of things. If I was wrong, *e.g.*, about the character of actual space being represented in Euclidean geometry, it makes not the least difference of principle. All mathematics admittedly reposes on the ultimate formal characters of things, not to mention the general presumption which as we have seen is involved in all judgment as such.

To elucidate the operation of the "surviving reality" in the most completely imaginary of creations I recur to the example of artistic fiction, on which I laid stress both in an earlier discussion and in the *Logic*.[1] In a work of artistic imagination, though you could hardly conceive a supposal more complete and self-contained, yet at every point the creative thought is determined by a "surviving reality," and the degrees in which the consequences of the suppositions are moulded by the universal of this reality operating within the imagined content illustrate every possible relation of

[1] *Logic*, i., 274; *Knowledge and Reality*, 140 ff.

supposition to its basis in reality. This is what is referred to when we speak of the fundamental truth of poetry or fiction—truth to philosophical insight, to life, to dramatic character, to the laws of artistic coherence. The reality lives and operates in the supposition, and is expressed *mutatis mutandis* in every judgment to which the suppositions can give rise.

Part D of Mr. Russell's paper does not so directly concern me. But I should like to say one or two things about it.

First, I cannot see that his "determination of the nature of an object capable of being thought about" is a peculiar case. All objects that are determined at all from premisses are determined by thought making constructions out of data which it attaches to a single subject. It makes no difference to the process whether the data are real or supposed, perceptual or intellectual; only in the case of supposition the conclusion is more explicitly conditional, and the inference to reality may not be expressed in detail.

And secondly, of course (p. 454) the inference is *from* the "nature" of the generality though it *appeals to* the nature of the whole real world. We are dealing here—I do not know why Mr. Russell omits to mention it—with a simple disjunctive relation, and the dependence of this on the nature of the generality, *e.g.*, of the species of triangle on triangularity, is common form in the account of disjunction.[1]

Thirdly, a denial is always ambiguous, and on page 454 I am not sure whether Mr. Russell denies that making simple intuition the basis of thinking is the rock to be avoided, or that to found our inference from R on the nature of R is to make simple intuition the basis of thinking. But I am quite content with his foundation of our inference from R on the nature of R as a system, so long as its dependence on surviving reality for its aspect of affirmation is accepted. That any system from which inferences are to be drawn should escape confrontation with the total universe, is what I cannot understand.

Fourthly, it is the whole of reality itself, not any subject selected within it, on which in my view the truth of a judgment claims to rest. Consequently, the difference between a real individual if there were such a thing within reality, and a logical individual (455) or whole capable of being thought about, is irrelevant to the question of dependence on reality. All thought-determination is determination by judgment, and the presuppositions of all judgment are the same.

Fifthly, I may venture to remark that the merit of Prof. Stout's view of the reality of alternative possibilities under a generality has always seemed to me to lie in the conception of relative possibility, according to which the whole set of alternatives are possibilities only from the point of view of the selected generality as such; but as determination progresses, the horizon of possibilities narrows—so I understand the view—until the fully determined or sole pos-

[1] *E.g.*, in my *Logic*, i., 327.

sibility, the fulfilled alternative, coincides with the fully determined reality. It is the alternative which is accepted by *all* the data. The relatively possible, I take it (I am not sure that Prof. Stout would accept this) is only relatively real. The problem, I should say, cannot be reasonably approached except on the basis of degrees of reality.

Sixthly, I cannot reconcile the footnote on page 451 with the account of generalities on page 453. I certainly see no objection to saying that A has the predicate "*a* or *b*"; but it follows from the nature of a generality (p. 453) that if A is determined as having this predicate of two alternatives, it is also determined as characterised by the general quality, say, colour, of which they are specifications, I suppose that the point of the footnote, with the reference to Dr. Latta's article in MIND 89, is to maintain the self-containedness of a relational system, and the truth of whatever determinations its nature necessitates, in relative opposition (relative *at least*) to the idea of judgment as prima facie ascribing some quality to something real. I do not think anyone could attach more importance than I do to the idea of a self-determining system; but still it seems to me, as I indicated above, that if you neglect the aspect of judgment, your system drops dead, and fails to be determining at all. It is as united in one with reality that its parts come together and acquire reciprocal bearings. The judgment *is* as it seems to me, the system's aspiration to truth. And is not Dr. Latta's difficulty, which he has most suggestively expressed, a difficulty in the nature of thought itself?

DISTINCTION BETWEEN THE PHYSICAL AND THE PSYCHICAL.

There is a point in Mr. Turner's paper on my *Theory of Mental States* in MIND for July, 1918, page 317, which I should like to explain briefly. He quotes my sentence "The nature of external objects is continuous with that of the stuff of mind, and is physical, *i.e.*, has variations relative to those of other objects, as well as psychical". And he objects to this as a distinction, that psychical content as well as physical, has variations of degree in relation to variations of other objects as, *e.g.*, fear in relation to hearing a gun fired. I daresay my phrase was not felicitous. But I think the distinction intended is sound. It is the same which Husserl afterwards pointed out between an Erlebniss and a thing given to perception.[1] A thing is in principle given and in and through variations according to the percipient's standpoint. An experience (Erlebniss) is simply itself, an absolute as it is given. It has no "sides," no "aspects". Its qualities and intensity are given, as what they are. It has not the inadequacy, the suggestion of points of view ad *infinitum* and new aspects relative to them, which essentially belongs to a thing perceived. "It is evident that the nuancing

[1] *Jahrbuch*, 1913, pp. 77, 81 ff.

sensation-contents themselves, which belong in actuality (reell) to the experience (Erlebniss) of the thing-perception, function as conveying nuances (variations, Abschattungen) for the object, but are not themselves in their turn given through variations."[1] I may vary from one degree of fear to another; but my fear does not present itself to perception through variations according to distance and position. That is what I meant to say.

BERNARD BOSANQUET.

[1] *Loc. cit.*, 82.

LOGIC AND FORMALISM.

I AM sure we ought all to be very much obliged to Mr. Shelton for the way he is helping logic to set its house in order. The versatility he exhibits in his benevolent interventions in logical disputes almost equals that of the Snark when, in the trial of the Pig, he not only acted as counsel for the defence but also found the verdict and pronounced the sentence. At any rate he is quite catholic in his generosity, and extends his aid to any logician he sees to be in distress. Thus he is not deaf to Mr. Pickard-Cambridge's mute appeal; but when he beholds him "trapped into a slight ambiguity" and unable to cope with the objections of a logic he does not understand, he at once rushes to his assistance, performs a "slight emendation" upon him, and thereby saves him from eight pages of criticism, which *eo ipso* become so irrelevant that he need say no more, nor fall into any more 'traps' —if only he will keep still.[1] Though at first it seems to savour a little of 'sympathetic magic' to suggest that an operation performed *upon Mr. Pickard-Cambridge* will have the effect of invalidating *my* argument, it all seems morally admirable, and it might even be logically helpful if Mr. Shelton had only been good enough to state what he conceived to be the "slight ambiguity" it took me eight pages to clear up. For I, unfortunately, have been fearing all this time that I was contending with something much more formidable, *viz.*, a sort of Freudian 'complex,' in which a profound but unconscious Formalism, allied to an inveterate Intellectualism, was misconstruing the simplest deliverances of common-sense experience.

Again, inspired by Dr. Coffey, Mr. Shelton comes forward as the chivalrous champion of Scholastic logic, though without "pretending to be an authority on it" (p. 465) or "wishing to be understood to be arguing for it" (p. 466). He convicts me of 'ignorance,' because I did not at once surrender to the distinction between 'rational' or '*certain*' and 'empirical' or '*provisional*' knowledge (p. 465), nor recognise that by no criticism could I ever hope to do more than induce a Scholastic to degrade a bit of knowledge, when convicted of empiricism, from the first class to the second, while preserving his distinction intact. But is this really so? Would it remain true and 'valid' if the First Class had *no* members, and it could never be shown to have any, humanly speaking? If the world were empirically such that *no*

[1] No 108, pp. 466-467.

'twos' and 'threes' ever behaved as they arithmetically should, nor ever combined to generate a progeny of 'fives,' would an arithmetic that had ceased to be *applicable* continue to be called '*true*'? And how is it an answer to the contentions, (1) that *if* a 'demonstration' conveys *no* assurance of the material correctness and actual occurrence of the conclusion it anticipates, it leaves us dependent for these on the empirical course of events, (2) that *if* every form is liable to become 'invalid' by becoming ambiguous in its application, none can be called 'absolutely valid,' (3) that *if* universals have to be selected from a number of alternatives, *whenever we try to argue from them*, we can never be sure that we *have* used the *right* ones for our purpose, until *after* the event and when the conclusion has 'come true,' (4) that therefore every 'demonstration' requires verification by fact? These are contentions to which the Scholastic logic is exposed, in common with the rest of the tradition, and so far it has not been possible to discover how either it, or Mr. Shelton speaking on its behalf, or Mr. Shelton speaking *in propria persona*, would cope with them. If they are admitted —and Mr. Shelton will no doubt tell us what he has advised the Scholastic logicians to do about them—wherein does the superiority of the 'rational' truth over the 'empirical' consist? The latter is no doubt provisional, and corrigible, and not absolute. But when it ventures on a prediction, we can be reasonably and practically certain that it will come true as alleged. The former is always at the mercy of any perverse ingenuity which chooses to misapply it, and will then lead us astray; while even in the best of cases we have always to wait and see whether its predictions will take effect. How then is its actual truth, when it is arrived at, more than empirical?

Finally it would be most ungrateful of me if I did not acknowledge Mr. Shelton's succour to me, his services as an expert commentator on my logical doctrines, and his powerful endorsement of my animadversions upon the present attitude of logicians. He finds "their philosophical basis so confused that I am bound to admit that Dr. Schiller's sweeping statement is not altogether unjust" (p. 469), and repudiates "the multitudinous confusion with which modern logicians have enveloped and disguised what to me are a number of very simple and obvious principles" (p. 464).

But I should be even more grateful than I am if I could make out from Mr. Shelton either (1) how he conceives "the meaning of formal validity" which seems to him so "clear and unequivocal," and (2) how he meets my objections to it. I find these problems particularly puzzling in connexion with his declaration (p. 467) that he, Mr. Pickard-Cambridge and I "are in entire agreement" on the contention that "no reasoning, no strictly logical argument, is in itself a guarantee of material or empirical truth". I welcome his assent to this principle, though I cannot altogether approve his annexation of it without conceding to Mr. Sidgwick's prior claims even the indemnity of a mention. But when he pro-

ceeds to infer that therefore "Logic becomes a purely conceptual science, like mathematics" (p. 469), I get qualms. I scent the cloven hoof of Formalism and resent the analogy with mathematics. Indeed, Mr. Shelton had himself observed this on page 468, and had embraced the scientist, the mathematician and me in a common condemnation on account of our conception of the relation of mathematical truth to its applications. Hence I am led to wonder whether he is speaking quite correctly for Mr. Pickard-Cambridge. Moreover he represents me (much more correctly) later as holding that "formal validity does not in fact exist".[1] If, then, logic is defined as a 'purely conceptual' science concerned with formal validity, does it not follow that it must be a science of the non-existent? And if so, why should it be valuable or admirable, especially if it is also admitted to be neither useful nor even usable? Surely the more natural inference from Mr. Shelton's 'axiom' is that as *material* truth is what we want to be assured of, and as formal validity will not secure it, we had better look out for something more effective and reconsider the whole problem of truth.

The 'metaphysical problem' on the other hand, put to me on page 469, I can understand. It seems indeed to be an excellent problem, on which a book might well be written; but I boggle at some of Mr. Shelton's illustrations. Thus I see no absurdity in saying "that the axiom of parallels and Riemann's space may both be true at the same time": surely, they both *are*, in the sense of 'truth' which matters most. The axiom of parallels is one way of stating the *differentia* of Euclid's space, and so is excluded from Riemann's: but, as Poincaré has so conclusively shown, *both* these conceptions are (or may be) *applicable* to our physical space, and in this sense 'true' (*qua* 'convenient'); whereas to the question whether our space *is* Euclidean or Riemannian the proper answer is *neither;* for to ask it is to exhibit a confusion of thought and a failure to distinguish between geometry and physics.

The main issue, as to the nature of logical 'coherence' and 'necessity,' however, could only be cleared up by an extended excursion into the psychology and postulates of knowing: so I will excuse myself with a pertinent analogy and ask Mr. Shelton whether, in his opinion, the rules of chess or bridge or lawn-tennis are absolutely true, metempirical and *a priori*, and productive of 'necessary truths'? If he asserts this, I will gladly concede that "the certainty of the *nexus*" in geometry is of the same nature: if he denies it, I will ask him to show in what relevant respect the cases differ.

[1] It is interesting to note that, in the same number of MIND, Mr. C. D. Broad has discovered that *inductive* reasoning cannot be regarded as formally valid, because it always involves either an illicit process of the minor or an affirmation of the consequent. If he would similarly go on to note that *deductive* reasoning is equally incapable of 'formal validity,' because it may always be charged with an ambiguous middle and cannot avoid a *petitio*, except by turning itself into a hypothesis and by submitting to the process of verification already rejected as 'invalid,' we should really be getting on!

I may conclude with a few comments on the appendix in which Mr. Shelton endeavours to solve the problem of logical form (pp. 470-471). His recipe is "First obtain some axiom or universal which can be regarded as absolutely true". This presumably is the logical parallel to the culinary direction "first catch your hare". But in its bearing on the discussion it labours under the disadvantage of begging the question. It is denied on the other side that such axioms can be obtained. 'Not even such as can be *regarded* as absolutely true?' Well, *anything* can be so regarded, if it is extralogical to raise the question of truth; but Mr. Shelton's example is not reassuring. He still quotes "things that are equal to the same thing are equal to one another," and thereby shows that he has not understood my illustration in No. 104, page 460. Or can it be that he is not cognisant of the psychological experiments on which it rests? At any rate I can only remark that though the principle may be called "undoubtedly valid"[1] it certainly is not absolutely true: it breaks down when it is applied to sense-perceptions. And we soon find that when it has done so Mr. Shelton is ready to deprive it of its title to validity. "The validity depends entirely on the assertion that the universal from which the form is derived is *absolutely true*." No, surely, on the *truth* of this bold assertion. I can agree, however, that "if the universal is not universally true the form is not absolutely valid, which is equivalent to saying it is invalid": but *I* should infer that therefore the universals known to science and in common use are *not* 'valid,' and that the hunt for a 'valid' one is a wild-goose chase.

F. C. S. SCHILLER.

[1] Though not, of course, in the sense of 'formally valid'. For Mr. Shelton's formulation, A = B, C = B, ∴ A = C, is obviously in the second figure and has an 'undistributed middle' in '= B'.

V.—CRITICAL NOTICES.

A Commentary to Kant's 'Critique of Pure Reason'. By NORMAN KEMP SMITH, D.Phil., McCosh Professor of Philosophy, Princeton University. London: Macmillan & Co., 1918. Pp. lxii, 615.

PROF. NORMAN SMITH dedicates this volume to the memory of Robert Adamson. And perhaps no higher commendation could be bestowed upon it than to say that it is a worthy tribute to offer to that memory. For Adamson was probably the greatest Kantian scholar which this country has ever produced; certainly his grasp of the multitudinous ramifications of Kant's speculation was unsurpassed, if not unique. Prof. Norman Smith's painstaking and searching *Commentary* combines qualities which Adamson would have been among the first to appreciate—wide and accurate learning, acute and pointed analysis of the various trends of inquiry in the *Critique*, maturity of philosophical insight in handling the intricate problems which call to be dealt with. The work is that of a genuine thinker who has spared no pains to make it adequate; and, although it takes the form of a commentary, it never sinks into the trivialities and ineptitudes that usually characterise Commentaries on philosophical classics. It is not, of course, and was not intended to be, a book to put into the hands of a beginner; but it provides for the advanced student most of the apparatus he will need in wrestling with the notorious difficulties of the *Critique*.

Naturally the author has availed himself largely of Vaihinger's massive *Commentar*, so far as it extends—*i.e.* to the end of the *Aesthetic*—and of Vaihinger's monographs on later sections. Sometimes, I am inclined to think, the influence of Vaihinger has been allowed to weigh beyond its due, but it never occasions acceptance of a conclusion that has not been carefully considered. The results of the devoted labours of such German scholars as Benno Erdmann, Adickes, and Reicke have been called into requisition, although one misses the names of men like Günther Thiele and Franz Staudinger to whom in one's own efforts to penetrate to the mind of Kant one is conscious of owing perhaps more than to those just mentioned. In tracing the development of Kantian doctrine, Prof. Norman Smith draws extensively on the *Reflexionen* and the *Lose Blätter*, and here again it is a question whether he is not at times tempted to attach too much importance to the evidence they appear to yield. But he uses this material in a perfectly judicious manner, and no one

will dispute the propriety of taking it into account in determining doubtful points of exegesis. With Cohen, Green, and Caird, in so far as they treat the Kantian system as a half-way stage to the Hegelian philosophy, he finds himself in frequent disagreement, but acknowledges nevertheless, as indeed every Kantian student must acknowledge, his great indebtedness to them.

The Commentary is preceded by a long and valuable Introduction, dealing in succession with Kant's method of composing the *Critique*, his relation to Hume and Leibniz, and the main general features of his philosophical teaching. There is also a very helpful Appendix in which the question of Kant's relations to his predecessors is discussed in more detail.

That the text of the *Critique* makes no small demands upon the skill whether of translator or expositor needs no emphasis. Not only is it wanting in clearness and freedom of style, but there is a continuous tendency on Kant's part to repeat, with certain modifications, some previously enforced contention. A thought is introduced, dropped, then taken up again; numerous side-issues are allowed to intrude, while the main theme is held in abeyance. Often there is confusing prolixity just where the importance of the subject calls for definite and unambiguous statement. And not seldom there are actual discrepancies and contradictions, showing that Kant was gradually feeling his way towards many of his central positions. The *Critique* is clearly not a unitary work; and, in common with Vaihinger, Adickes, and others, Prof. Norman Smith adopts the view that in the five months of the latter half of the year 1780, in which it was "brought to completion," it was not actually written, but was more or less mechanically constructed by the piecing together of older manuscripts, composed at various dates during the period 1772-1780, although, no doubt, supplemented by the insertion of connecting links and altered here and there in order to suit the new context. That this view is substantially correct may, I imagine, be taken as established. But it is a view particularly liable to be worked to death, and I confess to feeling serious misgiving when, for example, the attempt is made to break up the central portion of the *Analytic* into at least four distinct layers, somewhat after the manner in which the *Hexateuch* has been split up by recent critics. The information furnished by the posthumous fragments seems to me quite insufficient to warrant a procedure of that kind. And, after all, it has to be remembered that some of Kant's utterances which are most difficult to reconcile with his mature theory belong undoubtedly to his later years.

It has ordinarily been supposed that Kant was dependent for his knowledge of Hume's discussion of causality upon the translation of the *Inquiry* which appeared in 1755. Prof. Norman Smith, however, thinks the awakening from "dogmatic slumber" took place through his becoming acquainted with the argument of the *Treatise* as it was crudely presented, along with quotations from it, in Beattie's *Essay on the Nature and Immutability of Truth*, a

German translation of which was published in 1772. This is probable enough; but it is scarcely likely that, entertaining the opinion he did of Beattie's capacities, Kant should have trusted that version of Hume's doctrine and not have been led to a re-reading of the *Inquiry*. In any case, he can hardly have known the *Treatise* itself. The fact that he takes Hume's sceptical criticism to be limited to causality and his failure to notice Hume's empirical theory of mathematical truths would seem in that respect to be conclusive. Prof. Norman Smith's account of the influence of Leibniz upon Kant's philosophical development is extremely well done, and brings out with clearness and force the essential considerations. "The real is (for Leibniz) only one of the many kingdoms which thought discovers for itself in the universe of truth." Truth is, therefore, wider than, and logically prior to, existent reality, and, instead of being dependent upon the latter, legislates for it. Leibniz starts, accordingly, from the possible, as disclosed by pure thought, in order to ascertain in an *a priori* manner the nature of existent fact. And it was Kant's aim to determine how much of Leibniz's doctrine of the legislative power of pure reason can be retained after full justice has been done to Hume's proof of the synthetic character of the causal principle.

The statement of the more general features of the Critical theory which is contained in the Introduction must, as the author says, stand or fall by the results obtained through the detailed examination of the *Critique* itself, and may be here considered in conjunction with what is offered in the body of the *Commentary*. Prof. Norman Smith has been led to a somewhat startling interpretation of the genuinely Critical and mature teaching of Kant, wholly unlike that with which the Hegelian expositors have familiarised us, and sharply contrasted too with the subjectivist tendency that admittedly in the pages of the *Critique* pursues its course alongside of it.

About the subjectivism little need be said. There can be no reasonable doubt that Kant frequently tends to expound the general theorem that whatsoever can be asserted to constitute part of the world of experience must be construed in terms of intelligence as though it signified that the experience of the conscious subject consists exclusively of *Vorstellungen*, states of mind. There clings undoubtedly to a great deal of his argumentation the view that the object known must be a *construction* on the part of the finite mind, a *product* of that mind's own making, and must as such lie within the limits of the mental life in question. "If, as Kant so frequently maintains, objects are representations and exist only 'within us,' their existence 'outside us' must be denied" (p. 151). We get, in fact, a position hardly distinguishable from Berkeley's idealism which Kant was certainly anxious to repudiate.

That subjectivism is, nevertheless, not the final outcome of Kant's investigation of knowledge may be taken to be the conviction of all competent students of the *Critique*, however much they may differ as to the exact bearing and significance of what, in contrast

therewith, may be described as *the* Critical theory. To attempt to disentangle and put together the essential threads of Kant's more mature reflexion is a somewhat thankless task, for it is sure to be met with the taunt that it once more confirms the opinion of those who regard the *Critique* as a book "in quo quaerit sua dogmata quisque". Prof. Norman Smith has not been, however, on that account, deterred, but seeks to exhibit, even by the help of a diagram, what he conceives to have been Kant's new and revolutionary standpoint,—a standpoint which, as it is based upon the distinction between appearance and reality, he proposes to call that of phenomenalism. If I correctly understand his rendering of it, this phenomenalistic theory is briefly as follows. Fundamental to the whole way of thinking is, he contends, the antithesis between the empirical and the pure or transcendental ego. The latter is the counterpart of a single cosmical time and of a single cosmical space within which all events fall. Its objects are not mental states peculiar to itself, but genuinely independent existents constituting one common world. The conception necessitates a radical revision of Kant's earlier mode of regarding both the *a priori* and the *a posteriori* elements of experience. In the first place, the transcendental ego, although it is the "bearer of appearances," the "coequal" and correlate of the world of phenomena, is not forthwith to be assumed to be in itself ultimate or noumenal in character. On the contrary, it may be a resultant, resting upon and due to a complexity of generative conditions; and, in that case, these conditions could not themselves be known to be conscious. We are not, therefore, entitled to contemplate the synthetic processes that render experience possible as the activities of a noumenal self. For the only self we know is the conscious self, and the synthetic processes must take place and complete themselves prior to the existence of any consciousness at all. Moreover, granting that self-consciousness is the form of all consciousness, yet it is no less true that self-consciousness is only possible in and through the consciousness of objects. Consequently, there is no reason for supposing self-consciousness to be any more primordial or ultimate than consciousness of objects. Consciousness of self and consciousness of objects mutually imply and condition each other. In the second place, the manifold upon which the synthetic processes act cannot, from this point of view, be identical with the sensations of the special senses. Rather must the "primary manifold" be thought of as due to the affection by things-in-themselves of those factors in the noumenal conditions of the self which correspond to "sensibility". The spatial world within which objects are apprehended as causally interacting, and as giving rise through their action upon the sense-organs to the various special sensations as temporal events is generated through the synthesis of this primary manifold in accordance with the forms of space, time, and the categories. Sensations, therefore, are phenomenal effects arising from phenomenal causes; and to explain the phenomenal world as

constructed out of them would be virtually to equate that world with a small selection of its constituent contents. What, then, Kant is in truth now doing is to substitute the distinction between appearance and reality for the Cartesian dualism of the mental and the material. The psychical, or the subjective, is, as he views it, a name for a certain class of known objects, *i.e.*, of appearances, which, so far from constituting our consciousness of nature, are themselves part of the natural order which consciousness reveals. The physical is a name for another class of known objects, known no less immediately than sensations or other psychical objects. Together these two form a single system. But underlying this entire system, conditioning both series of phenomena, is the realm of noumenal reality; and it is to the latter we are referred when the question is raised as to the possibility of knowing or experiencing the natural system. Everything experienced, even a sensation or desire, is a natural event; but the awareness of it is not a natural event, and demands an explanation of an altogether different kind.

To discuss with any approach to adequacy the question as to how far the doctrine which I have, I hope without doing injustice to it, thus rapidly sketched does, in fact, correspond to Kant's final standpoint, so far as one can determine it, would mean entering into minutiæ which the limits of a review preclude. I think many lines of reflexion in those portions of the *Critique* to which our author refers do seem to adumbrate a position not unlike that which he delineates,—a position, I take it, which might otherwise be summarily expressed by saying that the empirical world as a whole, together with its counterpart, the unity of apperception, may be conceived as a noumenon in a system that may include countless other noumenal realities. But I doubt very much whether Kant ever reached the stage of thus definitely representing it to himself. And certain features in Prof. Norman Smith's version of the theory strike me as decidedly un-Kantian. In particular, I can find no indication in any of Kant's utterances that he conceived "the synthetic processes" to be "of a noumenal character". It is quite true that, while proceeding on the simple maxim that unity of consciousness is possible only in and through cognition of objective fact, Kant never succeeds in showing that the notions involved in such cognition of objective fact are in intimate relation to unity of consciousness, just because he persists in considering unity of consciousness in abstraction,—as dissevered, that is to say, from the complex whole of which it is a necessary factor. Yet it is abundantly clear that unity of self-consciousness as the condition of possible experience, the determination of intuitions according to the categories, and the reference of intuitions to objects are for him but three ways of naming the same thing. It is true, again, that unity of apperception cannot be regarded as "the source of the synthetic processes," if unity of apperception is to be taken only "in so far as it finds expression in self-consciousness" (p. 279); because, then, as Kant will have it, "ich, als denkend, bin ein Gegenstand

des innern Sinnes" (B. 400). But the 'pure consciousness' which is involved in the awareness of objects, whether outer or inner, is, we are expressly told, neither a notion nor an intuition; and it is only indirectly,—from its results, so to speak,—that it becomes possible even to speak of it as a process. It "resembles a substance which remains when all the accidents are withdrawn" (*Fortschritte*, H. viii, p. 531). And argument after argument of the *Deduction*, in the second no less than in the first edition of the *Critique*, would become unintelligible, if we were to suppose Kant was not meaning to imply that the various types of connexion in experience are the ways in which unity of apperception manifests itself in relation to the given manifold. For one thing, no point is by him more insisted upon than that conjunction or synthesis is never "given". If, however, the "synthetic processes" are "non-conscious activities" due to "noumenal conditions which fall outside the realm of possible definition" (p. 277), they would be no less "given" than "the product of noumenal agencies acting upon sensibility".

No one, I suppose, has ever felt satisfied with the account Kant has to offer of the "empirical ego". He emphatically describes it as only an object, and yet it is very evident that, even on his own showing, it is quite impossible so to regard it. Moreover, he is at once confronted with insuperable obstacles when he attempts to make the perception of the "empirical ego" as object conform to the general principles of his theory of knowledge. Prof. Norman Smith thinks (p. 311) that in maintaining the categories can *acquire* significance only in reference to outer perception Kant did not intend to limit their application to the mechanical world of physical science. Probably not; but the point is that, intentionally or otherwise, such is the consequence following from his contentions in regard to the inner life. Our author has himself to admit the perplexity that ensues from the permanent which represents time being identified with matter. He lays stress, however, upon the great importance and significance of the doctrine of inner sense in Kant's teaching, and apparently regards it as contributing in no small measure to the transformation which, as he conceives, the Critical theory underwent. But from his interpretation of the doctrine of inner sense its thoroughly unsatisfactory character seems to stand out more prominently than ever. "The subjective," he writes, "is not to be regarded as opposite in nature to the objective, but as a subspecies within it. It does not proceed parallel with the sequence of natural existences, but is itself part of the natural system which consciousness reveals. Sensations, in the form in which they are consciously apprehended by us, do not constitute our knowledge of nature, but are themselves events which are possible only under the conditions which the natural world itself supplies" (pp. 313-314). Yet we are told further on (p. 321) that, although inner *Vorstellungen* do not produce or generate spatial objects nor even condition their existence, they

are required for the individual's empirical consciousness of them. How, then, are these two assertions to be reconciled? Is it meant that *Vorstellungen* exist before there is any consciousness of them as objects, and that it is only when, through them, we are aware of their objects we can be aware of these *Vorstellungen* themselves as objects? In that case, however, the contention that they are merely a "subspecies of the objective" breaks down, for clearly their essential character is just that which the subsequent apprehension of them as objects fails to reveal. And not only so. The subjectivism of the fourth *Paralogism* of the first edition is not thus by any means surmounted, for if the empirical consciousness of spatial objects is mediated through *Vorstellungen*, the mere fact that the *Vorstellungen* may themselves come to be apprehended as objects would in no way preclude a Berkeleian from maintaining that the spatial objects "are something only through these *Vorstellungen*". If, on the other hand, it be meant that *Vorstellungen* exist only in so far as they are apprehended as objects, and that spatial objects are apprehended just as directly, or indeed that the former apprehension is possible only in and through the latter (p. 313), then not only is it difficult to see how these *Vorstellungen* can be said to form part of a mental life, but to speak of them as having external things for their objects would be to assert what is wellnigh unintelligible. For the subject-object relation surely implies that one term of the relation, at any rate, is more than an object. In spite, therefore, of Prof. Norman Smith's attempt to bring coherence into the doctrine of an inner sense, I feel constrained to acquiesce still in Adamson's judgment that it constitutes an altogether imperfect portion of Kant's analysis, and that its very imperfections show there must be some fundamental error at the root of the analysis.

Equally unsatisfactory is the position assigned by Kant to the 'transcendental ego'. According to Prof. Norman Smith's rendering of the genuinely Critical theory, some kind of existence must evidently be ascribed to the transcendental ego, although what kind is left entirely indeterminate. Admittedly it is neither noumenal nor phenomenal existence (p. 323 *sqq.*). Adamson more than once expressed his strong belief that "in the term 'pure ego' we have no more than Kant's peculiar and unhappy way of naming the fundamental characteristic of experience, that it is expressible only in terms of consciousness"; or, in other words, Kant's ambiguous mode of indicating the common feature of all parts of experience, that they are, as we say, 'in consciousness,' facts for mind. And the use, in this context, of the term 'transcendental' would seem, in itself, to support that view. The term, as Prof. Norman Smith points out (p. 73 *sqq.*), is primarily employed by Kant as a name for a certain kind of knowledge,—that kind of knowledge, namely, which takes into account the character of a notion or principle as a condition of experience, and as therefore a source of *a priori* cognition. A transcendental theory of space, for example, is a

treatment of space as a form of intuition and a source of *a priori* knowledge. There is no "transcendental sense-perception" (a phrase which Max Müller by a mis-translation ascribes to Kant) nor is there a transcendental space. Similarly, a transcendental theory of self-consciousness should be a treatment of self-consciousness as involved in all experience of a thinking being, as the form or norm of consciousness in general. There would be no distinctive type of consciousness different from the 'empirical' and possessing a mode of existence called 'transcendental,' but in virtue of what is implied in the supreme condition of experience,—that it has meaning, namely, only in self-consciousness,—there would follow the general determinations holding good for all experience, and constituting, therefore, a source of *a priori* knowledge. That Kant frequently tends in the direction of giving a quasi-substantive kind of existence to the 'pure ego' must be admitted. But the question is whether this tendency is not due to considerations such as those which frequently lead him to institute an antithesis between the form and matter of experience so sharp that it would, if interpreted literally, break the back of the theory of their essential correlation which he is beyond all else concerned to maintain.

I think an interpretation corresponding to that just indicated of the 'transcendental ego' fits another of Kant's characteristic conceptions, and that in its respect also the arguments of the present *Commentary* are unconvincing. In a very interesting and detailed discussion (pp. 204-219), Prof. Norman Smith attempts to show, what he finds has not hitherto been detected, that the doctrine of the 'transcendental object' is a pre-Critical or semi-Critical survival which is essentially out of harmony with Kant's more mature teaching. In all the passages in which the phrase 'transcendental object' occurs he takes the term 'transcendental' to be employed in the sense of 'transcendent' and supposes that what is meant is invariably the unknown thing-in-itself. To me, on the contrary, it seems clear that in the more important sections at any rate in which the notion in question is developed it is not identified with the notion of the thing-in-itself but rather contrasted with it. I think this is so, for example, in the section on *The Synthesis of Recognition in Concepts* (A. 104-110), where the pure concept of the 'transcendental object' is declared to be that which can alone confer upon all our empirical concepts relation in general to an object, or objective reality. The gist of the argument is that an object is that in the notion of which a given manifold is combined; the notion of an object is that which steadies the wandering manifold of possible intuition and prevents the contents of knowledge appearing haphazard and at random; an object is, in fact, the unity of rule which determines every manifold and limits it to conditions which render unity of apperception possible. If, now, Kant proceeds to state, this element of objectivity be taken in abstraction, if it be divorced from the act of perceiving or judging in which alone it has reality, it may be called 'the transcendental

object' (which in all our knowledge is always the same = x). The 'transcendental object,' that is to say, is no more than a thought, and we have no ground for regarding the content of that thought as an existing thing with any properties at all, much less as a thing giving rise to presentations which enter into experience. The decisive passage is, however, that contained in the chapter of the first edition on *Phenomena and Noumena* (A. 250-251). In the paragraph preceding those which are here in question, Kant has been pointing out that the very notion of 'appearances' might be supposed itself to involve the objective reality of noumena and to justify the assumption of a two-fold world—a *mundus sensibilis* and a *mundus intelligibilis* (such as he had himself adopted in the *Dissertation*), in which case the something that appears would be a thing-in-itself and an object of a non-sensuous intuition. But, he goes on, while it is true that our *Vorstellungen* are, in point of fact, referred by the understanding to some object, to a something as the object of sensuous intuition, yet this something is in truth no more than the 'transcendental object,' an x which merely has the function of standing as a correlate of the unity of apperception to the unity of the manifold, by means of which the understanding combines the manifold into the notion of an object. "This transcendental object can in no way be separated from the sensuous data, for on removal of these nothing would remain whereby it might be thought." And further on (A. 253), he affirms explicity that the 'transcendental object,' the 'wholly indeterminate thought of something in general,' cannot be called the *noumenon*, seeing there can be no notion of it except as the object of a sensuous intuition in general, and thus as one and the same for all appearances. Now, Prof. Norman Smith holds that what Kant is here "really asserting" is that "the correlate of the unity of apperception is the thought of the thing-in-itself" (p. 214), whereas as I read the text what he is asserting is the exact opposite. The 'transcendental object' he seems to me to be contemplating as an element in the fundamental act of knowing, the act whereby there is brought forward in the life of consciousness the antithesis between subject knowing and object known, the subject knowing not as yet being regarded as the concrete individual. In other words, the antithesis is conceived as merely the form of knowledge in general. The 'transcendental object,' the pure form of objectivity, introduces into sensuous apprehension the characteristic of objectivity; and accordingly when, in other places, it is said to 'affect our sense,' this need only mean, not that it works causally, as a transcendent thing, upon sensibility,[1] but that it *determines* sense-data through transcendental conditions. For throughout the argument Kant means by 'object' the general law or rule determining the mode of connexion of the given material, and the whole point of his contention is that apart from thought there can be no

[1] *Cf.* A. 253 = B. 309. "The mere fact that there is within me an affection of my sensibility establishes in no way any relation of such a presentation to any object."

objectivity. So that, in truth, the 'transcendental object' fulfils the same function as the transcendental unity of apperception. The difference consists simply in this, that the latter represents only the function of pure thought in its ultimate unity, while the former represents a problematical result, so to speak, of such pure function, an unrealisable but yet problematically definable task of constructing the pure object apart from all foreign ingredients. The thought of a thing-in-itself would not be the thought of 'something in general' but the thought of a definite specific 'something,' such as could be the object of a non-senuous intuition. If the perfect generality of the 'transcendental object' be ignored, if it be assumed to have a mode of existence which can be characterised by features other than those of experience, then, no doubt, Kant would say it is treated as a thing-in-itself. It is, however, as I understand it, part of his main purpose to insist upon the illegitimacy of the tendency, natural though it may be, to represent the 'transcendental object' as having a nature, a mode of existence of its own, and thus to transform a mere element of experience into a self-existent thing. In view of the explicit declaration that the 'transcendental object' cannot be called the 'noumenon' (A. 253), Prof. Norman Smith is obliged to suppose that the latter term is here employed by Kant in a different sense from the term 'thing-in-itself' (he takes it to be the thing-in-itself "more specifically determined"). For that supposition I can find simply no justification. "It is always safer," so we are told at the beginning of the book, "to take Kant quite literally. He nearly always means exactly what he says at the time when he says it" (p. 89). I am far from feeling inclined to subscribe unreservedly to this rather imperious dictum, but I am at a loss to see how any unprejudiced reader of the chapter of the *Critique* under discussion can imagine for a moment that the terms in question are not used quite indifferently, especially as in two places at least they would seem to be expressly identified (A. 254 = B. 310 and A. 259 = B. 315). That the passages referring to the 'transcendental object' are survivals of the pre-Critical period is, in any case, an exceedingly difficult position to sustain. As I read then, there is no need for resorting to so desperate an expedient. On the contrary, in the two sections I have cited, Kant appears to be wrestling with a problem from which, the Critical point of view, was forced upon him.

I must be content merely to call attention to another portion of our author's exposition wherein his account of Kantian doctrine deviates widely from that of most other expositors, and where, I cannot help thinking, the dictum just quoted has turned out to be a treacherous guide. He is of opinion that in the *Aesthetic* Kant is almost exclusively concerned with proving the apprehension of space (and time) to be psychologically *a priori*, and he finds there two contradictory views of the psychological nature of space intuition. According to the one, space lies ready (*liegt bereit*) in the mind, and exists, prior to experience, as an actual, completed, con-

scious intuition, which remains when all sense-content is thought away. It is not a mere form but possesses, independently of the sensuous manifold, a pure manifold of its own. According to the other, space intuition precedes experience only as a potential disposition which, by reflexion upon the activity of the mind, may be seen to yield a pure manifold distinct from the manifold of sense. In respect to this interpretation, I will only urge two considerations (1) It is clearly possible to attach an altogether exaggerated importance to such phraseology as 'liegt bereit,' etc. Certainly, so far as the doctrine of the subjectivity of space is made to turn in the *Aesthetic* upon psychological grounds it is more than doubtful. But, after all, Kant is not dealing even there with the psychology of space-presentation; the whole problem as to the psychical factors involved in localisation is, for example, never so much as alluded to. (2) When a writer, looking back upon what he has written, goes to the trouble of guarding himself against a certain interpretation of which he sees it to be susceptible, it surely savours somewhat of perversity to insist that nevertheless he could have meant, at the actual time of writing it, nothing else. I have, namely, in mind, the well-known footnote of the second edition (B. 160-161) in which Kant affirms in the most unmistakable of terms that he did *not* intend in the *Aesthetic* to imply that space was an original presentation, given prior to the synthesis which all experience involves, but that the form of intuition was the condition of the *possibility* of space-apprehension while combination of the manifold according to the categories was necessary to render it *actual*. Prof. Norman Smith further contends that nowhere in the *Critique* is space regarded by Kant as a form of the sensuous manifold. Although in the *Analytic* space intuition is recognised to be acquired by reflexion upon *objects*, yet the difficult position is still maintained that such reflexion yields a pure manifold distinct from the manifold of sense (p. 93). It is admitted, however, that there is no one passage which can be cited as quite decisively proving Kant's belief in a pure manifold of intuition (p. 93 *n.*), and also that in what the pure manifold consists or as to how it is to be reconciled with continuity there is no attempt on Kant's part to explain (p. 97). To me, I confess, these admissions appear in themselves sufficient to make us pause in attributing to Kant so crude a view; and, so far as I can judge, the statements to which appeal is made in support of the contention are all of them compatible with the less violent hypothesis that, in speaking of a manifold that is given *a priori*, Kant is but referring to features in the sensuous content which on account of their generality and constancy must be, as he holds, contributions from mind to experience, and which may be *thought of* in abstraction from the variability of the empirically given material.

By dwelling chiefly on the more disputable parts of the *Commentary*—and any independent study of the *Critique* will have inevitably its disputable parts—I have left myself little space for touching

upon the far larger range of topics in regard to which I am in full accord with the author's exegesis. Unless the *Commentary* had been expanded to unwieldy proportions, the *Dialectic* had necessarily to be passed through more rapidly than either the *Analytic* or *Aesthetic;* but there have been singled out for treatment the essential and fundamental things. In particular, I welcome the emphasis laid upon the positive side of Kant's teaching in respect to Reason and its Ideas. For, alongside of the negative line of argument directed to exposing the delusive tendency of construing the demands of Reason after the fashion imposed by the categories of the Understanding as solved by means of objects, there runs through the whole of the *Dialectic* the complementary trend of inquiry that aims to show what of real significance and worth is contained in the intellectual effort after unconditional completeness of comprehension. Kant never wavers in regard to the supreme importance of Reason, never hesitates to insist that, while the field of experience may bring before us problems which are in truth insoluble, the problems of Reason, which are not thrust upon it from without, must have a solution in terms of Reason. "The Idea of the unconditioned," as our author puts it, "is (according to Kant) distinct in nature from all other concepts, and cannot be derived from them. . . . As it is involved in all consciousness, it conditions all other concepts; and cannot, therefore, be defined in terms of them. Its significance must not be looked for save in that Ideal, to which no experience, and no concept other than itself, can ever be adequate. That in this Ideal form it has a very real and genuine meaning is proved by our capacity to distinguish between appearance and reality. For upon it this distinction, in ultimate analysis, is found to rest. Consciousness of limitation presupposes a consciousness of what is beyond the limit; consciousness of the unconditioned is prior to, and renders possible, our consciousness of the contingently given. The Idea of the unconditioned must, therefore, be counted as being, like the categories, though in a somewhat different manner, a condition of the possibility of experience. With it our standards both of truth and of reality are inextricably bound up" (p. 430). And again: "Reason determined by principles which issue from its own inherent nature, prescribes what the actual ought to be; understanding, proceeding from rules which express the conditions of possible experience, can yield knowledge only of what is found to exist in the course of sense-experience" (p. 443). Prof. Norman Smith considers that most of the sections on the cosmological Ideas must be dated as amongst the earliest parts of the *Critique*, and that their teaching is correspondingly immature. He gives good reasons for thinking that originally Kant intended to bring his whole criticism of the metaphysical sciences within the scope of his doctrine of antimony. And he tries to show that Kant's proofs both of the theses and of the antitheses of the antinomies are in all cases inconclusive. For instance, in regard to the third antinomy, he rightly points out that while it is comparatively easy

to reconcile the universality of the causal principle with the unconditionedness of the transcendental ground upon which nature *as a whole* is made to rest, it is a very different matter to reconcile the spontaneous origination of *particular* causal series, or the freedom of *particular* existences, such as human beings, with the singleness and uniformity of a natural system in which every part is determined by every other (p. 517). Once more, the statement of Kant's position in regard to the teleological argument (pp. 538-540) is an admirably lucid piece of exposition. Finally, in the concluding pages, the links of connexion between the *Dialectic* and the two later *Critiques* are clearly indicated, although, perhaps, here more might have been made of the notion that seems to come into prominence at the end of the *Dialectic*,—the notion, namely, of the *adaptation* of empirical fact to human reason or intelligence.

A notice like the present can convey but a very imperfect idea of a volume so elaborate and circumspect as that before us. Prof. Norman Smith is to be congratulated on the successful termination of a work which must have involved enormous toil and for the undertaking of which no ordinary amount of courage was requisite. He has made no idol of the great classic upon which he has so patiently laboured; he has exposed to view its inner want of consistency and its lack of completeness no less than its profound analysis and far-reaching suggestiveness. But he has made it once more evident that in the hands of Kant the problems of philosophy assumed a new form, and that there can now be no return to the pre-critical methods of inquiry. The translation of the *Critique* which Prof. Norman Smith has in preparation will be eagerly awaited and will certainly meet a real need. Meanwhile, the excellent renderings of many of the most important passages given in the *Commentary* will be extremely helpful. A word of recognition is due to the publishers and printers for the conscientious care with which the book has been produced from the press.

G. DAWES HICKS.

Elements of Constructive Philosophy. By J. S. MACKENZIE, Litt.D., LL.D. London: George Allen & Unwin. Pp. 487. 12s. 6d.

DR. MACKENZIE'S treatise, which, as he tells us in the Preface, has been before his mind for quarter of a century, covers, in a methodical argument, the whole main problem of philosophy. He has asked himself in good set terms whether an intelligible explanation of the universe can be found, and if so, in what direction it is to be looked for. Beginning, then, from Descartes, with the implications of mere belief, he proceeds to examine the presuppositions of judgment and inference — presuppositions which are summed up in the system of objective orders. Developing in a second book this conception of orders or categories, he discusses them in a succession

to the principle of which we are not unaccustomed, from quality at the beginning to the universality of the self at the end. And from this transition he passes in Book III. to confront directly his problem of the ground for accepting the conception of a Cosmos, and the ideas by help of which it may be made intelligible.

His work is full, lucid, and readable, and of all the very numerous points of opinion to which he refers, he leaves none untouched by free and suggestive criticism. Not unfrequently it will occur to the reader to ask whether his suggestiveness is fully controlled by a sound and relevant interpretation of the idea which he discusses. But a readiness to differ from everybody, even by approaching them from a standpoint which is not precisely their own, is too valuable in philosophy to be unwelcome. It leaves us, however, with such immense material for discussion on our hands—we feel, for instance, that we should like to be reinterpreting Kant's "Copernican" simile,[1] and Mr. Russell's self-representative series against Dr. Mackenzie, though in both cases on the whole we are with him—it leaves us with so much on our hands that the only thing to do seems to be to select a typical argument, which is also the central argument of the treatise, and see what attitude and what substantive conclusion it indicates on the writer's part.

Let us start from the treatment of the Laws of Thought (pp. 81 ff.). The Laws of Thought are the objective "conditions of intelligible meaning and valid inference," "yet they are not to be interpreted as conditions of reality," and when Mr. Russell said (as Mr. Joseph has also said), that they are Laws of Things, he was not expressing exactly what he meant (p. 81, note 1). And if, like Plato and Hegel, you maintain the rationality of the actual by showing the contradictions involved in not grasping reality as a whole, it follows from your view that "self-consistency can only be established as an ultimate result of thought about reality, not assumed as a fundamental presupposition" (82). "Fundamental laws of thought must, therefore, not be based on the nature of reality."

The consequence here propounded takes one's breath away, and is a case in which Dr. Mackenzie, so far as I can see, calmly and audaciously traverses the views of all modern students, at any rate, who pursue the method of which he is speaking. He has, of course, a point in what he says. It is that such a method admits

[1] See p. 156. The recent criticism of this simile, which Dr. Mackenzie adopts, seems to me to be verbal, ignoring the whole burden of Kant's argument. What he is insisting on is the need for the hypothetical deductive method; and he is urging that if you presuppose an observation point outside your hypothetical construction, you *ipso facto* debar yourself from completely theorising the data, and consequently treat them so far as things in themselves, *i.e.*, as something presented from a standpoint which you do not allow to be questioned. For a true scientific treatment, standpoint and data must all equally be elements in the hypothetical construction.

the contradictoriness of partial aspects within reality. Such an explanation as would be found, for instance, in Dr. McTaggart's discussion, of the connexion between this fact and the truth of the Law of Non-Contradiction does not seem to satisfy him. And, while thus digressing in criticism, I may suggest another point.

The forms of Objective Order, and the relations between Orders, are set forth in a special chapter. All implication depends on inclusion within some order (113). All inference rests on implication; so that "the general basis of all inference is the recognition of some form of Objective Order" (94). Now "what we mean by reality is the objective order" (62). Must not, then, the Laws of Thought after all express the nature of reality, and only so be the basis of inference?

However, this is not the view on which, if I understand him right, Dr. Mackenzie's argument is planned. He has taken on himself the tremendous burden of proving "the supposition that the universe is a perfect Cosmos" (125). This is for him, owing to his critical attitude described above, of the nature of a hypothesis, which must not be assumed at the beginning of an enquiry, but may conceivably be established in the end by the exclusive coincidence of its consequences with the data. Thus what he is on the look-out for is an ultimate explanation, something which will make the cosmos intelligible, a complete theory, an interpretation, a view of things as a self-explanatory system (347, 429).

What exactly explanation means is always a critical point in philosophy. The meaning which seems to me to be suggested by the course of the argument before us is that of a theory *ab extra*, a theory, so to speak, dealing with the conditions of universes as a class, and furnishing a plausible account of the distinctions, such as fundamental wholes and derivative sub-systems, chosen universes within the cosmos, and cycles of the upward and downward path within some inclusive spirit, by help of which the antitheses which seem to attend upon every real world may be plausibly rendered conceivable.

Now in a limited inductive inquiry you can really do something like this. Having before you an exhaustible range of data, you can exhibit a hypothesis whose consequences coincide with them, and you may by good fortune approach nearly to establishing it as the only hypothesis whose results do so coincide. Then you may plausibly say that the data are intelligibly explained by the hypothesis which thus is verified. Even so, it appears to me, a fundamental step is lacking to the argument. The true operative lever in induction is just that initial certainty that reality is self-consistent which our author has renounced. It alone gives the insight that there must be an explanation, and that therefore, where only one is possible, that one is true. It alone enables us to interrogate the data; not to seek a coincidence, but to analyse by help of a clue.

When we come to dealing with the cosmos as a whole, the

difference between the two initial attitudes reveals itself as of first rate importance. It is hopeless here to establish a theory such as will exhibit the experienced data deductively as its consequences, to propound an "explanation" which will enable us to say of every detail "This could not be otherwise," "the system is self-explanatory" and everything "arbitrary"—the term arbitrary as naming a defect to be remedied constantly recurs—is explained away. It is "arbitrary" for instance, that we have the colours we have, and not others. Yes, but the valuable study is surely that of the capacities, *qua* expressive whole, of the colours we have. It is an old story, that to explain is not to account for *ab extra*, but to think in connexion with a whole. Even if such a theory could in any case justify itself purely in the end and *a posteriori*, which I hold to be impossible, it could not do so here. The proof, as Hume argued with respect to God's power and goodness, could go only as far as the known facts which favoured it, and must stop short with them. And no one can imagine the data of the universe to be exhaustible. Our task, then, seems to me to be set by these conditions. We have to apply a clue within the whole, not to construct a story of it from without. Not that our clue is irrelevant to the whole. Here again is a point where the author surprises us. "Our knowledge begins with the parts"; our knowledge of the whole is less than our knowledge of the parts (140). We see his meaning, of course. We dare not claim a knowledge of "the ultimate structure of the whole". Still, that the universe comes to us as a whole, is perhaps what is clearest to us about it.[1] It is interesting here that the author holds Pluralism and Cosmism "a much more definite and fundamental antithesis than that between Realism and Idealism" (142). And he may be right. But surely it is a difference of degree. Primarily the world comes to us as a whole, within which we discriminate differences, and may no doubt, ultimately and in theory, substantiate them.

Now what I seem to myself to find in all the acutely interesting latter part of this work, is *not* the attempt, which I desiderate, to show how in our experience and in our best insight perfection and imperfection, good and evil, time and eternity, penetrate one another and are locked in indissoluble concreteness. It is rather to show how we may represent them as terms in relation, by help of abstract plans, cycles of change and restoration contemplated by dreaming spiritual beings, an upward and a downward path which would separate, if I understand the matter right, man's fall from his rise (445).

The hypothesis which, in the end, is to sustain the intelligibility of the cosmos takes shape as follows. Successive discussion of the categories, orders, or forms of unity has revealed no conception on which a self-explanatory system could be founded except that

[1] See *Studies in Hegelian Dialectic*, sect. 221, where Dr. McTaggart quotes

"We know what Heaven and Hell may bring,
But no man knoweth the mind of the King."

highest form of infinity, distinguished both from boundlessness as of space, and completeness as of a quality, which we think of as Perfection. "If a system is seen to be perfect, no further explanation need be sought. It is then apprehended as *causa sui*" (429).

The attempt to apply such an idea leads through the notion of a Creator—which makes shipwreck on the reasons that point to a finite god—to a different form of "teleological" notion, or notion incorporating the choice of the best (433). Such a notion involves in the first place the presupposition of a plan of the Cosmos, somewhat as might be illustrated by Hegel's *Logic;* and then the contemplation of it by an eternal spirit or spirits, which proceed to embody its requirements in the construction of a Universe or Universes. Each such construction would be a cycle or history, itself entertained as a dream by an eternal spirit, and the advantage of the theory, if I grasp it, is supposed to be that by postulating the eternal dreamer the cycle of events ceases to be in direct or primary time, having as it were an eternal being in that mind whose dream it is. The idea is drawn from the sense in which a tale presented to the imagination, though possessing a time within it, is cut apart from primary time, and becomes so to speak timeless. It is a succession, but does not pass away, and may persist for ages. Such a construction would be of the nature of a choice motived by perfection; and a universe or system of universes within a cosmos, so determined, would be self-explanatory. I presume that Leibniz, who is referred to in the argument (377) counts for a good deal in these suggestions. They are finally developed by illustration from Oriental philosophy, actually taking shape in a diagram in which the lesser cycle, included in the circle of the absolute which it touches at a single point, represents the linear course which in its successive segments, if I follow rightly, is both the downward and the upward path.

My difficulty in all this is, as I have indicated, that we seem to want an analysis in which the two circles, and the downward and upward segments of the cycle which stands for a world such as our own, should not be set out in relation but should be welded and interfused in an intense experience. The fall and the rise should surely go together. The filling of time does not get its eternity by being present to a dream consciousness, but by the nexus and concentration through which all history is in its every moment.

It does not help us, as I see the matter, to postulate perfection as an abstract character of the cosmos; our business in philosophy is to apply our clue in tracing a path, so far as may be, through our actual experience of evil, for example, and of contingency.

I am far from suggesting that Dr. Mackenzie makes no effort to deal, as it were from within, with contingency, change and evil. All of them, in principle, he interprets alike by the thought of the disruption of the whole "which seems to be a necessary antecedent to the process of its apprehension as perfect" (454). It is the term antecedent on which the difficulty of principle turns. "Being

a living whole it [the whole] is always in the making" (*ibid*). This seems fundamentally to give us what we want, the non-severance of perfectness and inperfection. But is it carried through?

I should have mentioned earlier Dr. Mackenzie's characteristic reference to the New Realists, in whom "because of their recognition of the reality of universals" (162) he finds a close affinity to such an idealism as that of Plato, and of whose protest against subjectivism he strongly approves.

So much of the excellence of this work lies in the spirit and freshness of its detail that its value must largely be lost in such a notice as the present. But its helpfulness as well as its attractiveness I have found for myself to be great.

BERNARD BOSANQUET.

Moral Values and the Idea of God. The Gifford Lectures at Aberdeen, 1914-1915. By Prof. W. R. SORLEY, Litt.D., LL.D. 16s. net. Cambridge University Press. Pp. 19, 534.

THE title of Prof. Sorley's Gifford Lectures suggests a comparison with Prof. Pringle Pattison's Lectures on *The Idea of God*. But the standpoint of the two books is different. Prof. Sorley writes as an ethical theist. 'The theistic view of the world which I have been considering is definitely an ethical view' (p. 473). His object is to establish the objective truth of the moral aspect of reality, and the validity of our moral judgments as at least equally important with our judgments of existence. This thesis naturally leads him to formulate a doctrine of values, a branch of philosophy which is more and more coming to hold a central position in all vindications of the spiritual character of reality. Before embarking on this discussion he is anxious to claim for ethics a position independent of metaphysical or physical theory. He considers that Cartesian rationalism, Hegelian idealism, and Spencerian naturalism all present ethics as derived from the conclusions of a systematic philosophy. The data, however, are insufficient. The study of ethics needs new concepts of its own, which cannot be unpacked from the generalisations of science. None of the philosophies above mentioned can do justice to moral experience, which has an important place in our consciousness, and must have a corresponding place in our theory of reality.

In enumerating the generic differences of value, he adds happiness to the familiar triad, beauty, goodness, and truth, but subsequently withdraws it, rightly as it seems to me, on the ground that happiness 'attaches itself to value of every kind' (p. 30). Happiness, in the sense of pleasure, has been used as a quantitative calculus for the other three, in the hope of reducing all values to a common standard. It is not a value among other values.

Values, it is often held, are 'only relative'. If this means merely that values are appreciated by the human mind, there is

the same reason for saying that facts are only relative. To deny the objective character of judgments of value is to reject the plain meaning of such judgments. When we say that anything is good, we certainly do not mean only that we like it. The purpose of knowledge is to understand the world, not our understanding of the world. If this is impossible, natural science must disappear with morality. We do not, except to a very limited extent, believe what we wish to believe, but what our environment obliges us to believe. The diversities of moral judgment are parallel to the diversities of scientific judgment; and no one has suggested that a man may, if he chooses, live in a geocentric universe. If, however, by 'relative' we mean that moral value always belongs to an existing concrete reality, Prof. Sorley holds that the moral judgment is relative: 'simple qualities,' not present in any consciousness, are not good or evil (p. 140). In summing up this argument, he says that the moral judgment claims objectivity, universality, and systematic or organic unity for its objects. Moral values are included in reality, and are manifested in conscious beings.

But how are these values related to the realm of existence generally? This question leads to a consideration of the famous theistic arguments. There have always been two ways of theism —that of the religious consciousness and that of reflective thought. Writers before Hume assumed too readily that religion and philosophy have the same God; but when a difference arises about the idea of God, the old proofs lose their cogency. Modern thought does not ask, Does God exist? but, How is the universe to be understood and interpreted? In spite of this, all the old proofs are valuable. The two motives of the Ontological Argument are the demand that our highest ideal shall not be severed from reality, and the intellectual desire for completeness in our conceptions. Of these the former tends to pass into the Moral Argument, the latter into the Cosmological. The second Argument, in asserting a First Cause, means that the scientific conception of cause is inadequate, and that cause should signify ground or reason. The name First Cause is unfortunate, for the demand is not less for a Final Cause. The theist objects that the law of invariable sequence is no explanation at all. I should add, much more strongly than Prof. Sorley, that invariable sequence has nothing to do with causation. The Teleological Arguments is not in principle distinct from the Cosmological. Even if the doctrine of evolution has put some of Paley's arguments out of date, we must admit that there is an adaptation, not accounted for by natural selection, between our reason and the cosmic order. The Moral Argument for the being of God is in Kant a means of uniting two disparate systems of conceptions. Without God, our moral ideas could not be realised in the world. God is brought in to resolve the dualism of nature and morality, two systems, neither of which, taken by itself, would need the hypothesis of a God. This cannot satisfy us. We must

try to show both that the moral order is objectively valid, and that actual experience is fitted to realise this order. The latter attempt is hopeless if we assume that a good world-order must tend to promote the enjoyment of conscious beings. But this hedonistic assumption is not necessary, and is contradicted by all experience. There is no justice for individuals, if justice means the award of pleasure and pain according to desert. But if the object of the world-order is the realisation of moral goodness in conflict with evil (and it does not seem that moral goodness can be actualised in any other way), the pessimistic position is turned. In order to justify the moral order, it is necessary only to prove that it tends to promote goodness, not that it tends to promote happiness; though observation confirms the belief that happiness is very slightly dependent on external conditions, the happiest lives, so far as we can judge, being often lived in very adverse circumstances. The author quotes a very remarkable sentence from Robert Louis Stevenson. 'That which we suffer ourselves has no longer the same air of monstrous injustice and wanton cruelty that suffering wears when we see it in the case of others'. These words are quite as true as La Rochefoucauld's cynical aphorism that we are all courageous enough to bear up under our neighbour's misfortunes.

In the controversy between monism and pluralism Prof. Sorley admits his sympathy with pluralistic idealism, which 'recognises the real world of persons as charged with the discovery and realisation of values, and interprets the apparatus of life and its environment as subordinated to this supreme purpose' (p. 485.) God is the perfect rather than the infinite Being, and what we know of Him is necessarily dependent on our experience of moral goodness in finite beings. At the same time, 'by ultimate reality is not meant material existents, or even the realm of persons, but that which is the ground of everything that is real. A comprehensive view of this ultimate reality must include an account of things and persons, laws and values' (p. 509). Here, if I am not mistaken, we can trace a wavering between personal idealism and Platonism. In other parts of the book 'things' appear to be mere instruments for the actualising of reality in persons.

The book is very clearly written and well arranged. It is with no wish to detract from its merits that I subjoin a few difficulties which have occurred to myself in reading it.

The contrast between the scientific and the ethical view of the world seems to me to be exaggerated. 'The aspect of value,' he says, 'is omitted by science'. Is this true? No doubt the scientific view of the world is an abstract view. The scientist leaves out of his purview those ethical values which Prof. Sorley rightly claims to be essential parts of reality; and being frequently a poor metaphysician the scientist thinks that he has eliminated value-judgments altogether. But it is easy to prove that his world is a mental construction which contains very much besides the atoms or units of electricity which are his ultimate realities. His

descriptions are charged with valuations, which reveal themselves in such words as 'progress,' 'degeneration,' 'higher' and 'lower' forms of life. And even if he could succeed in being impartial between a man and a microbe, is not the uniformity of natural law and the continuity of evolution, which the scientist sets himself to prove, itself a valuation? Is it not clear that he trying to interpret the world as a manifestation of the True, as Prof. Sorley is trying to interpret it as a manifestation of the Good? The author says, 'If we call truth a value, do we not thereby obliterate the distinction between cognition and appreciation?' (p. 31). But I doubt whether there is any cognition without appreciation. To dissever the two is to introduce a dualism which will trouble us all through our thinking. When he says (p. 286), 'There are aspects of experience which science does not touch . . . truth in scientific theorems and elsewhere,' I cannot understand him. Nor can I agree with him when, in his zeal to prove 'the catholicity of moral value,' he asserts that aesthetic and intellectual values are limited by external conditions which the social order has not put within the power of all, but reserves for those who are favoured by economic circumstances: moral values are not limited in this way. What economic advantages had Socrates, Spinoza, Böhme, Burns, Wordsworth, Charlotte Brontë, and many others whose minds have been their kingdom? It is internal, not external limitation which prevents the man in the street from being a sage or an artist. This strange opinion appears on page 49, and is repeated on page 343.

The error, as it seems to me, of holding that 'as long as we keep to the scientific interest thoughts of value do not arise,' is connected with the very questionable doctrine that 'value lies outside the scope of the natural sciences because they are concerned with the universal, and the individual is the home of value' (p. 111). To a Platonist this is flat blasphemy. 'The man of science must think himself out of that human prejudice which interprets all things as made for man' (p. 169). Are we to infer that the moralist, who gives way to this prejudice, is on higher ground? It would almost seem so; for we read that 'for man the world exists for the sake of personality and its worth' (p. 167). It is most strange that he should think that 'the cosmologies of Plato and Aristotle, of Plotinus and St. Thomas, even of Schelling and Hegel, were suited to a pre-Copernican universe of which man was the real centre' (p. 467). The three first, at any rate, were not guilty of such anthropocentrism as Prof. Sorley's own. His determination to find in moral purpose the meaning—almost the sole meaning—of the cosmic process leads him to shrink from the unanimous testimony of natural science about the fate of the world. Instead of attaching his faith in the conservation of values to the existence of a personal God, as Varisco does ('Value will or will not be permanent according as the divine personality does or does not exist'), he clings to the idea of a progressive increase of value in time;

and when science asserts that time will at last wipe out all human achievements and the memory of them, he argues that we have other sources of information—the objectivity of the moral values—which makes the scientific view of the future 'doubtful' (p. 174). But there is no room for doubt. As surely as the sun rose this morning, so surely will the time come when this earth and all who it inherit shall disappear like the unsubstantial fabric of a vision. If moral values are eternal, as we believe, it is not in time, but in the unchanging mind of God, that they are preserved. Varisco's statement is perfectly correct. All intrinsic values are supratemporal, and belong to the divine mind. It is probably Prof. Sorley's exclusive pre-occupation with morality, which can hardly exist as such in the eternal world, that makes him so indifferent to the Platonic conception of value. It would be difficult to maintain that beauty and truth have their home only in the individual. Prof. Sorley, as we might expect, argues that 'morality is lost' if we follow Plato and the mystics. But this need not be so if we hold that the ends of morality are supratemporal, while its training-ground is in time and space. This, it seems to me, is the only view which enables us to surrender without regret those theories of perpetual progress which science assuredly will not allow us to retain, and which no other line of enquiry can validate.

W. R. Inge.

The Philosophy of Plotinus. By William Ralph Inge, C.V.O., D.D. London, 1918. Longmans, Green & Co. Two vols. Pp. xvi, 270; xii, 253.

The Dean of St. Paul's work on Plotinus, which has long been known to be in preparation and would presumably have been in the hands of readers sooner but for the delivery of its substance as Gifford Lectures in the University of St. Andrews for 1917-1918, is sure of a warm welcome both from theologians and from students of Platonism. Dr. Inge's long and loving study of Plotinus has given him a right to speak with special authority as an interpreter of Neo-Platonism, and the value of his work to those more particularly interested in the theory of the religious life is further enhanced by his wide knowledge and firm grasp of the higher mystical and devotional literature of Christianity. He further brings to his task wide and catholic sympathy with all that is finest in philosophy, art, and literature, keen insight into the special difficulties which attend the attempt to live up to humanity's highest level in our troublous time, and a fearlessness none too common among the Churchmen of our day, in speaking wholesome but unpalatable truth. All these qualties in combination were bound to result in a remarkable book, remarkable not merely as a deeply sympathetic interpretation of one of the great ancients, but as an invigorating help to the living of life in the right spirit under the stress of the

untoward circumstances which most of us who are now mature, at any rate, must expect to beset us for the rest of our days.

As equipment for the study of Neo-Platonism the English reader will henceforth find Dr. Inge's volumes, together with Mr. Whittaker's historical study, indispensable. And it may be doubted whether two works of such value in this particular department are to be found in the literature of any other modern language. It will hardly be thought necessary for me to recommend Dr. Inge's work further by elaborate encomium or to present the readers of MIND with a detailed abstract of its contents. Good wine needs no bush, and any one who wishes to understand Plotinus will in any case have to master the Dean's exposition for himself. Hence I propose to confine this notice to a very few remarks, chiefly on points where Dr. Inge does not wholly carry me with him, though my inability to follow him wherever he leads must not be supposed to detract in the least from my admiration for the way in which his work has been done.

I may express regret for one thing for which Dr. Inge is not in any way responsible. It is a pity that the external form of so fine a work should suffer both from the badness of the paper on which the book is printed and the low level of correctness reached in the printing (especially the accentuation) of the Greek quotations with which the lectures are documented. Probably however both these deficiencies are unavoidable in a book produced under the conditions of the last few years. I pass on to one or two more serious points. It would be an impertinence to dwell on the great general excellence of Dr. Inge's scholarship, but the best of us make slips at times, and I think I have noted a few cases where a misrendering, or the adoption of a probably unsound reading, has affected Dr. Inge's view of a passage.

The saying of Petronius about the city where the gods are more numerous than the men does not refer, as Dr. Inge seems to suppose (vol. i., p. 36) to Rome, but to Capua; these over-plentiful deities do not belong to the "Roman pantheon". When we are told that the mediæval hell with its tortures is a "legacy from Persian thought" through Manichaeism (*ibid.*, p. 45) is it not forgotten that the Christian Church got its ideas on these points very much from Virgil, who in turn was utilising the myths of Plato? In the footnote to page 51 of the same volume, it seems to be forgotten that the horrible "witch-trials" do not really belong to the "Middle Ages". The trial of Joan of Arc is one of the very earliest, and the worst horrors all belong to the ages of the Renaissance and the Reformation. It is a singular fact that it is just the very "darkest" age which seems to have been freest from this particular evil. In the really "dark" ages it was not so much witchcraft as the bringing of charges of witchcraft which was looked at askance, apparently because it was still the tradition that magic was part of the imposture of Paganism which it was the business of Christians not to believe in. When we are told on page 80 that the "last phase" of

Greek philosophy was "theocentric,' it seems to be forgotten that the formula "not man, but God, the measure" comes straight out of Plato's *Laws*. The "fantastic love of numbers," mentioned on page 84 as ensnaring Plato, is an odd name for the scientific study of the properties of the different classes of number which still occupies the pure mathematicians,[1] and one would like to know Dr. Inge's authority for saying on the next page that the Pythagoreans regarded their founder as a god. Dr. Inge's mathematics are sadly at fault when he says on this same page that Pythagoras "discovered the ratios of the octave, the fifth and the fourth, contained in the harmonic progression 12, 8, 6". The "ratio of the fifth" is, of course, 9 : 6, and 9 is not a term of the harmonic progression in question, but of the *Arithmetic* progression, 6, 9, 12.[2] I do not know that there is any evidence for an assertion made on page 86, and frequently repeated, that the doctrine of re-incarnation, as held by the Pythagoreans, is a modification of an earlier theory of the incarnation of a tribal soul in the successive generations of the tribe. We know of plenty of savages from the Australia Arunta upwards, who believe in individual re-incarnation, but do we know of any who believe in the "tribal soul"? I suspect this creature to be an invention of Auguste Comte. In Greek literature from Homer onwards ψυχαὶ are *always* the ψυχαὶ of individuals. The κόσμος, indeed, according to Platonism, has a soul, but the κόσμος is one individual animal, a ζῷον, not a "race". And I should be content to appeal to scholars on the simple point whether such an expression as ἡ τῆς Ἑλλάδος ψυχὴ would not be felt in Greek as a particularly daring and conscious metaphor. Indeed, when one comes to reflect that it is manifestly the experiences of dreaming, trance, and the like which gave rise to the primitive notion of the ψυχὴ as a "man within the man," it seems obvious that the belief in ψυχαὶ of individuals must come first. Dr. Inge's version of the facts seems to me to rest on a mere misinterpretation of the institution of the blood-feud, and to take no account whatever of the elementary fact that what ψυχὴ meant in Greek, until Socrates got hold of the word, was just "ghost," the thing a man "gives up" when he dies, or sends abroad in a dream or an epileptic fit.

In general Dr. Inge seems to me to suffer from an inability to make up his mind on a question which is of great importance for a

[1] Would Dr. Inge speak of Frege or Cantor as "ensnared" by the "fantastic love" of numbers? Yet Frege's *Grundgesetze der Arithmetik* in particular is entirely given up to the very kind of problem we know to have occupied Plato's attention. Indeed Frege's work might, in our day, admirably serve Plato's purpose as a βάσανος of the "ageometrete". If you understand Frege, you will have no difficulties about the εἴδη. If you find Frege's work baffling, you would do well to let the εἴδη alone.

[2] Plato himself is careful to point out in the *Epinomis* that both the A.P. and the H.P. are required for the "octave," and the object of employing a "double" Geometrical Progression in the *Timaeus* is also to get both the λόγος ἡμιόλιος and the λόγος ἐπίτριτος into the formula on which the World-Soul is constructed.

definitive interpretation of Plotinus. I do not think he has himself a very coherent view of the philosophy of Plato, and the same remark applies to the predecessors of Plato. In what Dr. Inge has to say about these "ancients" I seem to detect a fusion of incompatible interpretations drawn partly from Prof. Burnet and partly, as I seem to divine, from Mr. Cornford. This hesitation about Plato may not much affect Dr. Inge's understanding of the substantive doctrine of Plotinus, but it does seriously affect our judgment on his relation to the great philosopher whose thought he believed himself to be reproducing. It is a striking fact that, though Dr. Inge devotes a good deal of his space to Plato, he seems quite unfamiliar with the formal exposition of the Platonic doctrine of God in the Tenth Book of the *Laws*.[1] When he wishes to ascertain Plato's views on theology he regularly has recourse not to this scientific exposition but to the *Timaeus*, which is a less safe guide for the double reason that the dialogue is of the nature of a cosmogonical myth, and that the author's utterances are dramatically circumscribed by the necessity of accommodating them to the personality of his fifth-century Pythagorean astronomer. I think that, admirably as Dr. Inge knows his Plotinus, his work would have gained in value if he had known the history of early Greek speculation half as well. He would not then, for example, have written on vol. i., page 108, as though Platonism had suffered an eclipse during the whole period from Plato to the age of Philo.[2] He would have been aware not only that the Academy itself suffered no such eclipse, but that the development of Stoicism into a doctrine for mankind at large was only made possible by Posidonius, who virtually incorporated Platonism wholesale into his exposition of the Stoic system. I might note that it is a little under the mark to exempt "the scientific treatises" of Aristotle from the literature familiar to Plotinus (vol. i., p. 111). The *Enneads* are full of criticism of doctrines from the *Categories*, the *Physics*, the *De Caelo*, the *De Generatione*, and the *De Anima*. Careful scrutiny would, I feel convinced, reveal a still deeper debt to Aristotle. Perhaps Dr. Inge has been misled by the rarity with which Aristotle's name is mentioned in connexion with these criticisms. Occasionally, I think,

[1] He is even not quite clear on the all-important point that Plato's God is a ψυχή and that no ψυχή is an εἶδος.

[2] The common story that with Arcesilaus the Academy became "sceptical" seems to me to have no further basis than the simple fact that the literary output of the school took the form of criticism of the Stoic empiricist dogmatism. But Plato himself held as strongly as anyone that empiricism leads to scepticism. That the New Academy did not neglect the positive side of Platonism is surely proved by its careful preservation of the work of the Old Academy, with which the author of the anonymous *Commentary on the Theaetetus*, Plutarch, Proclus are all familiar, and again by the thorough understanding of Plato's point of view shown by such a writer as Atticus in the second century of our era. That the professed sceptics always refused to recognise the Academy as sceptical points to the same conclusion.

the actual interpretation of Platonic passages a little at fault. For example, it is hardly accurate to say (i., p. 144, n. 2) that the *πλανωμένη αἰτία* of the *Timaeus* is the "*mechanical* cause". For what the modern reader would take this to mean is that this *αἰτία* operates with a routine uniformity, whereas it is precisely its incalculability on which Timaeus means to insist. The name is probably connected, as Prof. Burnet has suggested, with that of the *πλανῆται*, the "tramps" of the heavens, and it is above all things the irregularities in their visible movements which the *πλανωμένη αἰτία* is meant to account for. It is the "contingent," rather than the "mechanical" aspect of things. So I think it is really a piece of misleading modernising to compare the relation of *νοῦς* and *νοητόν* with the relation between Energy and Matter in modern Physics (i., p. 151). "Energy"—if we mean kinetic energy in terms of which all other energy has to be evaluated—is itself just one of the *νοητά*. I do not know what Dr. Inge has in his mind when he says (*ibid.*, p. 155) that Anaxagoras' *νοῦς* was intended "rather to account for the creation of an ordered universe than for its working". If Dr. Inge will look at the remains of Anaxagoras, he will see that this is exactly wrong. It is the "working" of our part of the universe which is traced to *νοῦς*; creation is explicitly excluded from the philosophy of Anaxagoras, as it is from Ionian science in general. If the remark is intended to reproduce the criticisms of Socrates (and Aristotle) on the Anaxagorean *νοῦς*, Dr. Inge has got hold of a wrong point. The complaint was not that Anaxagoras did not explain the "working" of the world (Socrates in the *Phædo* implies that he did make the attempt), but that he made no use of the principle of the "choice of the best". I think it also a defect in the account of Plotinus' doctrine of the "sensible world" that no explanation is given of the Stoic conception of *φύσις* as one term in the series of ascending "potencies," and the implied distinction between *φύσις* and *ψυχή*, since the Stoic use of the term *φύσις* is so constant in Plotinus, and I also regret that another common Stoic technicality, *σπερματικὸς λόγος*, should be habitually paraphrased rather than translated. I suppose that it is asking too much of a philosophical writer to discuss Time without dragging in M. Bergson, but I own I do not see that the doctrine of M. Bergson really throws any light on that of Plotinus. When Plotinus, for example, criticises the Peripatetic definition of time as the "number of motion," his point has nothing to do with views of the Bergsonian type. He wishes merely to insist that "number" as such is logically prior to its applications; he is, in fact, dwelling simply on the independency of the notion of cardinal number. It is Dr. Inge, not Plotinus, who is responsible for the view that there are (i., p. 172) contradictions which "inhere in the notion of Time". And when Plotinus speaks of "real" Time, he means just what M. Bergson does not mean, "Newtonian" Time. Altogether Dr. Inge's mathematics, and to a lesser degree, his physics, strike me as not the happiest part of his book. They are

hardly what one would expect from a professed Platonist, though they are, to be sure, no worse than Aristotle's. It is odd, for example, that Dr. Inge should express a certain approval of the belief in recurrent world-cycles without a hint that the second law of Thermo-Dynamics creates a difficulty for him.

I am a little surprised, again, that Plotinus' mention of the brain as the central organ of the "nervous system" should be taken as evidence that he knew how to "make use of the new science of Galen". That the brain is "what we think with" had been the doctrine of Alcmæon of Crotona in the sixth century B.C. From the medical school of Crotona it had spread to the "Italian" philosophers, and is duly recorded by Socrates in the *Phædo* as one of the theories which had interested him in his early days. For the same reason Timaeus is made to teach the same thing in Plato. It had also been the doctrine of Hippocrates. It is probably a mistake to translate the Stoic *καταληπτικὴ φαντασία* (i., p. 230) "*irresistible* impression". It means rather a judgment in which *I* "convince" or "convict" the object of having certain characters.[1] This is, to my mind, proved by the fact that the recognised sceptical reply to the Stoic's assurance was *οὐ καταλαμβάνω*, "*I* decline to convict". From the Stoic point of view *κατάληψις* is an *activity* of the mind and finds expression in a judgment (*κρίσις*).

A sentence on page 239 of vol. i. gives me occasion to protest against a misapplication of an Aristotelian phrase which threatens to become established among us (the more as Dr. Inge makes the same mistake elsewhere). The words *διάνοια αὐτὴ οὐθὲν κινεῖ* do *not* mean "*discursive* thought (as contrasted with some superior kind of thought) moves nothing". In fact the opposition of *διάνοια* as a lower kind of thought to *νόησις* as a higher only occurs in Plato in the passage of the *Republic* where Plato wants a special word to distinguish mathematical deduction from the critical examination of the postulates of the mathematical sciences. When Aristotle makes the observation just quoted, his object is not to distinguish an inferior from a superior kind of thought but to distinguish "mere thought," "thought not further qualified" from practical thought, thought directed on an object of appetition, as is shown by the words which immediately follow. The full quotation is *διάνοια αὐτὴ οὐθὲν κινεῖ ἀλλ' ἡ ἕνεκά του καὶ πρακτική*, "thought by itself leads to no movement, only thought with a purpose in view, *i.e.*, practical thought". The suppression of the second half of the sentence and the misleading insertion of the word "discursive" completely pervert Aristotle's meaning.[2]

[1] For the juridical metaphor compare *κατηγορεῖσθαι*, to be predicated, and its cognates. The predicate is thought of as a "charge" formulated against its subject. *κρίνειν*, *κρίσις*, of course, also have the same ring about them. The "judgment" is the "finding" of a court.

[2] Also the point in which—in the specific passage of the *Republic*—*νόησις* is contrasted with *διάνοια* seems to me to be misrepresented when *διάνοια* is rendered "*discursive* thought". All thinking is "discursive," and it is surely clear from Plato's own account of dialectic and its employment on

There is a curious mistranslation of Plotinus himself at i., page 257, where we are told that "the Universal Soul governs the world by simple commands; individual souls by direct creative activity (*αὐτουργῷ τινι ποίησει*)". Of course "creative activity" belongs, as Dr. Inge is of course aware, even more to the *ψυχὴ τῶν ὅλων* than to the *μερικαὶ ψυχαί*. *αὐτουργὸς* means simply "one who works with his own hands" as opposed to the superior workman who directs the operations of others. Euripides calls Electra's nominal husband an *αὐτουργὸς* meaning precisely that he cannot afford to employ "labourers" on his farm, but has to till it for himself. So Plotinus means that your soul or mine, in weaving its body, is, so to say, a "hand" in the employ of the "soul of the whole".

When we turn away from such small points of detail, the chief criticism to which Dr. Inge, as I think, lays himself open is that he is perhaps too exclusively interested in the religious faith and *Religionsphilosophie* of his author. These he expounds with real mastery and in language often of singular beauty. There is probably no existing work from which so admirable an account can be got alike of the ascent of the soul to God as conceived by Neo-Platonism and of the philosophical theories presupposed in the doctrine of the soul's ascent, and it would be hard to find words adequately to express the service that Dr. Inge's exposition has rendered to rational piety and to the philosophy of religion. I hope it will not seem thankless if I venture to remark that Plotinus was not only a great saint and a profound thinker about the problems of the religious life, but more generally a great metaphysician, and that there is very much in his metaphysics which is of high importance and interest, though not very directly connected with his religion. Dr. Inge has perhaps thrown all this side of Plotinus unnecessarily into the shade. For instance, the longest single work comprised in the *Enneads* is the criticism of the doctrine of the "categories" which runs through the first three "books" of the sixth *Ennead*. The discussion is full of acute observations and often anticipates much that has come to the front in modern researches into the "theory of knowledge" and the "logical foundations of the exact sciences". But Dr. Inge's own interests do not lie in the direction of *Categorienlehre*, and he consequently gives but a very inadequate account of this section of the *Enneads*, which he regards as "not quite worthy" of the author. I am not so unreasonable, when I remember what Dr. Inge has given us, as to complain that he is not equally interested

the postulates of geometry that the philosopher's *νόησις* does not mean "intuition" but critical analysis of what have hitherto been accepted as ultimate truths. The inferiority of *διάνοια* does not lie in being "discursive" but in taking its postulates for granted *without* "discoursing" about them. It leaves that inquiry into the truth of a postulate itself of which the *Phædo* speaks unattempted, and *confines* itself to examining the *συμβαίνοντα* which follow from the uncriticised admission of the postulate. The rendering of the word "*discursive*" thought really falsifies Plato's point.

in all questions of philosophy. But I may perhaps be allowed to say that, just because his interest in this side of philosophy is not very strong, the reader who means to understand Neo-Platonism thoroughly will need to retain Mr. Whittaker's book as a guide side by side with these lectures.

There are certain points which are made very prominent in the lectures on which the reader will probably feel that he desires more information not so much about the views of Plotinus as about those of Dr. Inge. For my own part, I feel this very strongly whenever the exposition touches upon the reality and significance of the temporal. Dr. Inge is one of those philosophers who seem to think Time a sort of unfortunate blunder on the part of the "One". He appears to be constantly anxious, as far as he can, to reduce the temporal to the level of a mere delusive appearance. Thus in his long examination of the Immortality of the Soul I seem to find a hesitation between the genuine Neo-Platonist view that Time is a condition of the exercise of the Soul's capacities and a very different view, not Neo-Platonic at all, which treats Time as an illusion, and if thought out, is quite inconsistent with any real belief in any kind of Immortality. I cannot believe that Dr. Inge really holds this second view with his eyes open, just because it is so clear to me that he would have to abandon his discipleship of Plato and Plotinus if he did. But he does seem to me to put it forward from time to time, and in a rather crude form, where it is really out of place. There can really be no sort of doubt that on the Neo-Platonic view existence in "eternity" and existence "in time" mutually imply one another; one of them is not the "mere appearance" of which the other is the reality.[1]

So I find myself in a similar uncertainty about Dr. Inge's real opinion on the point of difference between Neo-Platonism and Christianity, which is, of course, precisely the question of the reality of the entrance of the Divine into the historical life of humanity. In one place Dr. Inge repeats the famous criticism of St. Augustine on the limitations of the "Platonist" doctrine as if he wholly sympathised with it (as I admit I do myself). Yet in his eloquent and fascinating "pirlicue," when he is dwelling on the spiritual sustenance we may draw from Plotinus amid the troubles of our own anxious time, he speaks of the absence of the historical from the faith of the Neo-Platonist as an advantage. Now it cannot both be a defect of the "Platonists" that one must go elsewhere to learn the supreme truth about the Divine self-surrender, the fact that the Word "entered humanity," and also a merit of their belief that it has no attachment in historical fact One knows where Plotinus stood in this matter. It is pardonable to feel that one would like to know where Dr. Inge stands.

A. E. TAYLOR.

[1] Baron von Hügel's doctrine of the "compenetration" of Time by Eternity, on the other hand, seems to me the genuine Neo-Platonic theory.

VI.—BOOKS RECEIVED.

Charles Augustus Strong, *The Origin of Consciousness*, London, Macmillan & Co., 1918, pp. viii, 330.

Joseph Jastrow, *The Psychology of Conviction*, Boston and New York, Houghton, Mifflin, Co., London, Constable & Co., 1918, pp. xiii, 387.

Roy Wood Sellars, *The Next Step in Religion*, New York, The Macmillan Co., 1918, pp. 228.

S. Radhakrishnan, *The Philosophy of Rabindranath Tagore*, London, Macmillan & Co., 1918, pp. xi, 294.

H. J. W. Hetherington and J. H. Muirhead, *Social Purpose : A Contribution to a Philosophy of Civic Society*, London, George Allen & Unwin, New York, The Macmillan Co., 1918, pp. 317.

Mary W. Calkins, *The Good Man and the Good : An Introduction to Ethics*, New York, The Macmillan Co., 1918, pp. xx, 219.

Hyman Segal, *The Law of Struggle*, New York, Massada Publishing Co., pp. 161.

Rupert C. Lodge, *The Meaning and Function of Simple Modes in the Philosophy of John Locke*, Bulletin of the University of Minnesota, 1918, pp. vi. 86.

Abraham A. Robeck, *The Interference of Will-Impulses*, Princeton, Psychological Review Co., pp. viii, 158.

Charles Mercier, *Crime and Criminals*, London, University of London Press, 1918, pp. xvii, 291.

Stewart A. McDowall, *Evolution and the Doctrine of the Trinity*, Cambridge University Press, 1918, pp. xxvii, 258.

A. Porot et A. Hesnard, *L'Expertise Mentale Militaire*, Paris, Masson et Cie., 1918, pp. 137.

W. S. Urquhart, *Pantheism and the Value of Life*, London, The Epworth Press, 1919, pp. xii, 732.

Studies in the History of Ideas, New York, Columbia University Press, 1918, pp. 272.

Wilmon Henry Sheldon, *Strife of Systems and Productive Duality*, Cambridge, Harvard University Press, 1918, pp. x, 534.

Edward Mercer, *Why Do We Die?* London, Kegan Paul, Trench, Trubner & Co., 1919, pp. 202.

S. G. Hefelbower, *The Relation of John Locke to English Deism*, Chicago, The University of Chicago Press, 1918, pp. viii 188.

Ignatius Singer, *The Rival Philosophies of Jesus and of Paul*, London, George Allen & Unwin, 1919, pp. 347.

Bertrand Russell, *Introduction to Mathematical Philosophy*, London, George Allen & Unwin, 1919, pp. viii, 208.

William Ernest Hocking, *Morale and its Enemies*, Yale University Press, 1918, pp. xv, 200.

Henry H. Slesser, *The Nature of Being*, London, George Allen & Unwin, 1919, pp. 224.

Isador H. Coriat, *What is Psycho-analysis?* London, Kegan Paul, Trench, Trubner & Co., 1919, pp. 124.

Walter R. Miles, *Effect of Alcohol on Psycho-Physiological Functions*, Washington, Carnegie Institution of Washington, 1918, pp. 144.

Frank C. Constable, *Myself and Dreams*, London, Kegan Paul, Trench, Trubner & Co., 1919, pp. xii, 358.

Florian Quaniecki, *Cultural Reality*, The University of Chicago Press, 1919, pp. xv, 359.

F. Matthias Alexander, *Man's Supreme Inheritance*, London, Methuen & Co., 2nd Edition, 1918, pp. xxviii, 239.

VII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xxvii., No. 3. **C. A. Richardson.** 'Scientific Method in Philosophy and the Foundations of Pluralism.' [The two most important tendencies in modern philosophy are spiritualistic pluralism, with its genetic method, and the new realism, with its scientific method; the former is the outcome of empiricism, the latter is the true progressive product of rationalism. The scientific method, investigating the logical form of facts, is limited by the conceptual standpoint; critical and constructive in its own sphere, it becomes arbitrary in its attempt to demarcate the province of philosophy; in particular, its ignoring of the subject rules out certain problems (*e.g.*, the ethical) and forbids the supplementing of description by explanation. Pluralism starts out from the self, a true unit, whose essential nature we actually realise; its genetic method enables us to give explanatory value to such concepts as causality, continuity, substance, activity; avoiding the introduction of unknowns, it brings home to us the nature of existence in general in an unique way.] **J. E. Creighton.** 'The Social Nature of Thinking.' [As we have transcended the doctrine of social contract in political philosophy, the hedonistic and intuitional theories of morality, and the classical forms of political economy, so must we also transcend individualism in logic, and recognise that the intellectual life can be realised only through membership in a social community.] Reviews of Books. Notices of New Books. Summaries of Articles. Notes.—Vol. xxvii., No. 4. **E. Albee.** 'Philosophy and Literature.' [Philosophy, which aims to be objective and universal, still cannot deal wholly impersonally with personality itself; and literature, which is frankly temporal and national, still makes in its highest forms a universal appeal.] **M. De Wulf.** 'The Teaching of Philosophy and the Classification of the Sciences in the 13th Century.' [The philosophical programme of the University of Paris is closely connected with a classification of human knowledge (science, philosophy, theology) accepted by all scholars of the 13th century; its notes are cosmopolitanism, serene optimism, and religious faith.] **H. Haldar.** 'The Absolute and the Finite Self.' [An idealism which regards the Absolute as the individualisation of the perfect selves into which it is differentiated for the realisation of its own purpose can incorporate within it pluralism and realism, but not panpsychism.] **C. A. Bennett.** 'An Approach to Mysticism.' [All the chief characters of the mystic (renunciation of thought, passivity, naive optimism, inability to formulate the contents of his illumination) have fruitful analogies on the familiar levels of life.] **A. E. Avey.** 'The Present-Day Conception of Logic.' [Modern logic has gained by generalisation (the 'science of relations' replacing the 'science of the laws of thought'); by the recognition of inference 'by added determinants' and 'by complex conception'; and by express consideration of the inner structure of the term.] **K. E. Gilbert.** 'The Mind and Its Discipline.' [Formal discipline is sanctioned by a conception of the mind as universal or general function, characterised by the original spontaneity and general connectedness of consciousness.] Summaries of Articles. Notes.

PSYCHOLOGICAL REVIEW. Vol. xxv., No. 3. **H. H. Bawden.** 'The Presuppositions of a Behaviourist Psychology.' [Mind names the fact of the control of the environment in the interest of the organism through the interaction of inherited capacities and acquired abilities. Mind is thus a relation within behaviour, the class-name for an assemblage of particular facts of adaptation and adjustment.] **K. Dunlap.** 'The Significance of Beauty.' [Beauty is the sign and expression of an individual's potentiality for the species. The most beautiful are those whom we should choose to be co-parents of our children, if we considered nothing but the highest mental and physical welfare of these children.] **J. Peterson.** 'The Functioning of Ideas in Social Groups.' [Social psychology has not realised the implication of 'idea' in genesis and *modus operandi*. An idea is an acquired, more or less detachable, stimulus-response disposition or habit. From this point of view such concepts as imitation, suggestion, consciousness of kind, repression, demand and receive new explanations.] **R. M. Ogden.** 'The Attribute of Sound.' [The attributes are pitch, volume, intensity, duration, and probably brightness. By appropriate mental acts, these attributes are worked up into the resultants of tone, vowel, and noise.] **G. W. Stewart** and **O. Hovda.** 'The Intensity Factor in Binaural Localisation: and Extension of Weber's Law.' [Experiments with simple tone show that the observer's response as indicated by the constructive angular displacement is proportional to the logarithm of the ratio of the two stimuli.] **R. Pintner.** 'The Mental Indices of Siblings.' [Group-tests prove that on the whole the general intelligence of siblings is more nearly alike than that of unrelated children selected by chance. The resemblance is due to inheritance.]

AMERICAN JOURNAL OF PSYCHOLOGY. Vol. xxix., No. 3. **H. J. Mulford** 'The Human Mind: a Suggestion as to the Coustitution of Normal, Subnormal and Supernormal Mind.' [To know mind we must know brain; and to know brain we must study its phylogenesis. The feeble-minded brain is essentially motor or reflex. The normal brain shows the motor and thought functions in co-operation. The supernormal brain combines the functions of the future with the structures of the present; its function must therefore be slowed down.] **M. Otis.** 'Æsthetic Unity: an Investigation into the Conditions that Favour the Apperception of a Manifold as a Unit.' [Experiments on the effect of position, form, colour, direction, and size. Where there are two unit-making factors in opposition, the one may be subordinated; or the secondary may add a constructive element; or there may be temporary or permanent confusion.] **G. C. Myers.** 'Some Variabilities and Correlations in Learning.' [The relative ranking of individuals of a group working at the same task for a long period of time tends to remain constant. In the average mental test, a few trials are as good as an infinite number.] 'Minor Studies from the Psychological Laboratory of Vassar College' **M. Montague, M. M. Reynolds,** and **M. F. Washburn.** 'XXXIV. A Further Study of Freshman.' [Failure to get above the lowest quartile in two or more freshman tests indicates nearly equal chances that the student will withdraw before the beginning of the senior year.] **M. E. Cobb, M. Kincaid,** and **M. F. Washburn.** 'XXXV. Further Tests of the Verbal Ability of Poor Spellers.' [Good spellers have the greater verbal ability, as measured by number of words formed from a given set of letters.] **J. Cattell, J. Glascock,** and **M. F. Washburn.** 'XXXVI. Experiments on a Possible Test of Æsthetic Judgment of Pictures.' [Assigning low rank to a good picture is a better indication of poor artistic judgment than assigning high rank is of good judgment.]

E. B. Titchener and **H. P. Weld.** 'Minor Studies from the Psychological Laboratory of Cornell University.' **E. de Laski.** 'XLII. The Psychological Attitude of Charles Dickens towards Surnames.' [Dickens is not exceptional either in his responsiveness to names or in his mode of their formation; but his names indicate a tendency to look down on his characters.] **C. B. Moore.** 'Notes on the Presidents of the American Psychological Association.' Book Notes.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS. xv., 12. **E. E. Sabin.** 'Some Difficulties in James's Formulation of Pragmatism.' [It is criticised from the standpoint of a more advanced pragmatism, and charged with confusing knowledge of the reality of an object with knowledge of the truth of a judgment, with describing backward-looking verification instead of forward-looking cognition, and with failing to identify his 'pure experience' with the dynamic conception of the 'fringe' which contains the future acting in the present.] **A. I. du P. Coleman.** 'The Most Desirable Macaria.' [A plan to endow research.] **A. T. Kitchel.** 'Idealism on an Azalea Bush, or Practice and the Ego-Centric Predicament.' [Men really seek knowledge enough to act successfully and ego-centric idealism would not work.] xv., 13. **P. Ackerman.** 'Some Aspects of Pragmatism and Hegel.' [An ingenious paper which argues that the whole of pragmatism has been anticipated by Hegel and that the differences are unessential. This feat is achieved by (1) ignoring the contrast between the empiricism and pluralism of pragmatism and the apriorism of Hegelism, and making its 'logic' not creative *a priori*, but "only an *ex post facto* analysis of knowledge" and the general scheme of a method any one can use; (2) by contending that pragmatism 'presupposes' essential notions of rationalism, *viz.*, an antecedent knowledge that the world is amenable to purposive manipulation, has a structure (because metaphysics is the description thereof), is determined (because it is predictable and because "continuity involves determinism"), is a paradoxical whole created by its parts and nevertheless prior to them (because Dewey has said that the practical judgment is itself the chief factor in making the situation about which it is judging, and lastly, because it admits that "a question presupposes its (*?an*) answer"). (3) As for the crux about Time, it is not clear that Hegelism denies it altogether or that experimental logic need regard the time order as vital to the establishment of the logical order. (4) As for the pragmatist criticism of idealism that it is (*a*) dualistic, and (*b*) denies distinctions, Hegelism is not dualistic, and its 'fixed object' makes knowledge possible, not superfluous. If the dilemma of knowledge is 'either unnecessary repetition or meaningless manipulation,' and pragmatism has chosen the latter, it has not chosen the better part.] **H. L. Hollingworth.** 'Report on the New York Branch of the American Psychological Association.' xv., 14. **M. R. Cohen.** 'Mechanism and Causality in Physics.' [Concludes that "mechanism has failed as a final and complete account of physics. An adequate analysis of its progress bears out the contention that not ὕλη, formless matter or blind sensation, but mathematical and logical relations form the intelligible substance of things. But that the world contains more than this intelligible substance, our emotions and actions amply testify."] xv., 15. **W. M. Urban.** 'Again, the Value-Objective and the Value-Judgment: Reply to Prof. Perry and Dr. Fisher.' [*Cf.* xiv., 7, 21. An elaborate reply which brings out as new points that in Urban's view 'oughtness' is not identical with 'obligation' but is 'the more general category' of which obligation is a special case, and that there is "an almost inevitable equivocation in the truth concept," because though "every judgment lays claim to truth,"

there is "judgmental knowledge" "which does not assert the existence of the object either explicitly or hypothetically".] **L. Brink.** 'How the Concept of the Unconscious is Serviceable.' [It "has been adopted to express a conviction of the survival of a vitally affective past which influences the present, and to make this accessible to advancing scientific investigation," and no one who has been present at a psycho-analytic 'confessional' and watched "the struggle with repressed memories and painful disturbance occasioned by displaced affect" and "the struggle into consciousness of some forgotten, now unconscious experience" can doubt "the actuality of repressed memories and their psychic vitality".] **W. T. Bush.** 'Another Comment on Prof. Warren's Analysis of Purpose.' [Admitting that 'purpose' or 'freedom' is not 'scientific,' and must be non-suited if universal determinism is assumed, it may yet be held that this assumption is only methodological and adopted for the practical control of events.] xv., 16. **G. Santayana.** 'Literal and Symbolic Knowledge.' ["The aim of intelligence is to know things as they are"—even in the knowledge required for successful practice. If, however, a representative theory of knowledge is adopted, it interposes a screen of instrumental ideas between the mind and things and provokes the sceptic to deny the need for any realities behind appearances. More specifically it can be denied that intelligence can gain its end (1) because "the very notion of an external reality to be known is absurd and self-contradictory," (2) because reality is such that it can be known, or (3) that *we* at least cannot know it. But (1) involves a denial that "intelligence 'points' as a dog does," and taking sense-data as 'signs,' can "when knowledge is perfect," realise its 'intent' "that the full essence of the object and nothing more should be present to the mind". Now such an essence everything must have; for "a being without any essence is a contradiction in terms". It may, however, be unknowable, in the sense that our faculties are not adequate to describe it. Also reality is ultimately to be known only as a *datum*, by 'intuition' and 'acquaintance'. Now intuition, though not inerrant, is 'transitive,' "since the essences it observes are independent of it . . . in character and identity, since, whatever is true of any essence is true of it always," and "knowledge of fact, while never demonstrably or absolutely sure, often reaches the highest degree of practical evidence". That, too, is fallible, but "hallucination, madness and dreams are soon cured or soon fatal". Still "the disparity between human ideas and natural things, though not absolute nor irremediable, is real and habitual". It need not breed scepticism, however, if it recognised that "knowledge of existences has no need, no propensity and no fitness to be literal". They need only be 'symbolic,' and though "the ideas we have of things are not fair portraits. they are political caricatures made in the human interest, but very often, in their partial way, masterpieces of characterisation and insight". They do not form 'a screen,' because "there is no arrest of cognition upon them". Taken as passive they are "at best the essence of the thing, never the thing itself," but, taken functionally as symbols, they are "wholly and essentially transitive". Thus "knowledge of nature is a great allegory, of which action is the interpreter". "Perception is thus originally true as a signal, but false as a description," the "direct source of data" being "the organ in operation not the object". The conclusion is "that complete knowledge of natural objects cannot be hoped for. We know them by intent based on bodily reaction"; if they are to be known to the core "it must be through sympathetic imagination": for even an adequate knowledge of the essence "remains to a claim to the end, subject to the insecurity inseparable from animal faith".]

REVUE DE METAPHYSQIUE ET DE MORALE. Nov., 1917. **A. Darlu.** '*La Religion* de M Loisy.' [M. Loisy finds the common fundamental elements of all religion in Faith, Duty, and Self-sacrifice. In his insistence on the second he approaches M. Durkheim, in his humanitarianism he recalls Comte. His Catholic training enables him to see the importance of discipline, the absence of which he considers to be the main internal danger of modern democracy. M. Darlu points out that religion is distinguished from mere morality by adding a faith that there is a remedy for 'the injustice of *things*' to a hope of the gradual disappearance of the injustice of people.] **L. Dauriac.** 'Nécessité médiate et nécessité immédiate.' [An extremely long discussion of abstract ideas and the laws of thought, with many historical illustrations.] **A. Reymond.** 'Les ordinaux transfinis de Cantor et leur définition logique.' [Objects to Cantor's ordinals $\omega + 1$, $\omega + 2$ . . . etc., on the ground that, if the '1' here considered be the same as in the expression $n + 1$ it makes no difference to a number like ω, whilst, if it be a new kind of '1' the series $\omega + 1$, etc., needs a special justification which Cantor does not give. Accuses Cantor of confusing cardinals and ordinals, and helping himself out with a surreptitious reference to geometrical continuity. (To the present abstractor it seems that C. was quite clear on the point; that it is nonsense to talk of '1' in any unambiguous sense as 'having a power of ordination and a power of cardination,' the latter of which decreases as n increases; and that M. Reymond forgets that '1' and '+' stand respectively for a quite different entity and operation in cardinal and in ordinal arithmetic. An hour's study of the relevant §§ in *Principia Mathematica* may be recommended.)] **G. Guy-Grand.** 'De la liberté en temps de guerre.' [Confines himself to freedom of speech and publication. It cannot be maintained in principle that it is *never* right for a government to suppress the publication of opinions and even of facts known to neutrals and enemies. In peace it is better to let all opinions find their own level through free discussion; in war it is possible that the process, always lengthy, may lead to irretrievable disasters before it is completed. The greater suppression of unpleasant facts in France than in England or Germany may be defended in the one case by the fact that France is and England is not an invaded country, and in the other that Frenchmen (happily, the writer thinks) have not that blind confidence in their governors which Germans have so far displayed.] **E. Rignano.** 'La rénovation de l'école.' [Pleads for toys which shall be accurate models of real life. (Steam-engines are to be preferred to clock-work ones. I agree.) Geography and history to be taught not as masses of facts, but as bases for reasoning and comparison. Mathematics to be taught in close connexion with its physical applications. This demand is illustrated by the story of the mathematician who wondered what was 'this wretched π which turned up in almost all formulas'. (But why regard the ratio of circumference to diameter as *the* meaning of π?) Latin and Greek to be suppressed for all but specialists. Literature admitted as a relaxation from observation and reasoning and to inspire public spirit. Philosophy to be restricted to 'scientific synthesis,' classical systems of metaphysics to be expounded to students of literature as beautiful myths.] Nécrologie. [Émile Durkheim.] Jan.-Feb., 1918. **E. Durkheim.** '*Le Contrat Social de Rousseau*, histoire du livre.' [The C.S. was originally meant to form the fundamental part of a larger work called *Des Institutions Politiques*. The 'natural man' regarded by Rousseau as a psychological abstraction, *viz.*, a man with nothing but sensations and impulses and void of all that springs from life in society. Not devoid of pity, because this does not involve abstract ideas, but incapable of any extended benevolence and only preserved from constant fight-

ing by seldom meeting anyone else to fight with. This state happy, but unstable through the irregularity of external nature. Society is artificial for two reasons: (i) because it is circumstances external to man which force him into society, and (ii) because a genuine society is regarded as a new kind of individual by its members, and yet the notion of a person whose parts are persons is a fiction. 'C'est parce que la société est une organisme qu'elle est une œuvre d'art.' Rousseau held that actual societies were worse than the state of nature, because in them men are subjected to *arbitrary and variable* control; but he did not hold that society as such is necessarily worse than the state of nature. (A most illuminating commentary).] **H. Wildon Carr.** 'L'interaction de l'esprit et du corps.' [Takes as established the view that there are mental diseases of purely mental origin, and argues that body and mind interact as wholes. Distinguishes between the relations (1) of life and matter, (2) of mind and living organism. 'Body' here = 'living organism'. Interaction not a theory but a fact to be reconciled with other facts. Consciousness not a property of matter, and only seems so when we forget that it always involves memory and comparison. Mind characterised by continuity of memory, body by that of vital process; these are distinct, and gaps can occur in one without implying gaps in the other. (The facts quoted seem to me insufficient to support the view that there are ever gaps in the vital process so long as the body considered remains alive.) Mind has a definite organisation and structure of its own, as shown by the facts of repression, of planes of unconsciousness, and of their inner relations. (But surely we did not have to wait for Freud and his observations to tell us that our minds were different from our bodies.) Duration and activity are the fundamental factors in life; the former characterises the mind, the latter the body; action consists in differentiating a single unity according to two different plans. The relation between the two is one of solidarity or co-operation, not of causality.] **V. Delbos.** 'L'art et la science.' [Art involves fiction, which science condemns; the faculties of mind cultivated by science are opposed to those which produce great art; science favours a materialistic ideal of comfort by supplying the means to it. Hence it is concluded by many that art is doomed to decay. The author has no difficulty in showing that the first reason alleged is nonsense; as to the second he points out that the results of science may arouse æsthetic emotion and that a new theory is a work of artistic creation.] **H. Bourget.** 'Les mesures et notre connaissance du monde exterieur.' [Distinguishes sharply between *nombres exacts* like π and e which we can continue according to a definite known law as far as we choose and *nombres de mesure* which are what we actually observe and never extend to more than eight or so figures. We tend without justification to regard the latter as always approximations towards the former. Really we have no right even to substitute 0's beyond the last figure which our measurements give us, and all questions of incommensurability or transcendentality are out of place in *nombres de mesure*. It is particularly dangerous to add 0's in this unjustifiable way when large numbers of arithmetical operations have to be performed on these quantities, and, whatever may be said of the Method of Least Squares as a theory, lack of care on this point has vitiated many of its applications. The class of *nombres de mesure* is a finite class of finite rationals any two of which differ by a finite amount. Limits and differential equations are strictly out of place and can only be used in physics by postulating that our *nombres de mesure* represent *nombres exacts* in nature. (A very useful reminder for all of us.)] **E. Halévy.** 'Les *Souvenirs de Lord Morley*.' [A not very sympathetic account of Lord Morley's *Recollections*. Morley never mentions Mr. George. (But possibly he holds the charitable view that when one

can say nothing good it is best to say nothing at all.) 'Lord Morley finds nothing to do but write the epitaph of a century.' (Is a man of over eighty years of age to be blamed for doing this instead of trying to direct a war of which he disapproves or of engaging in a hopeless propaganda against it.)] **G. Aillet.** 'La Société des Nations.' [Discusses books by E. Milhaud and M. Leny. Disagrees with the former in thinking that non-arbitrable questions may arise between states. A very favourable account of the latter's work with some criticisms on points of detail.] Mars-Avril, 1918. **E. Durkheim.** '*Le Contrat Social* de Rousseau' (suite et fin). [To avoid the evils of the state of nature an authority is needed which in its strength and impersonality shall stand in analogous relations to the individual citizen to those in which the physical world stands to the natural man. Such an authority is found when all give up their actual possessions to an association which guarantees to each what it subsequently allows him to possess. The essence of such an authority is not its overwhelming strength (though this is practically important) but its impersonality and neutrality as between the citizens. The general will is the will for what will benefit each citizen; it is thus best ascertained if each voter votes independently of the rest, for then idiosyncratic variations will cancel out. This will not happen if men vote as members of parties or other associations, because the number of competing groups will be small. Hence R.'s horror of subordinate groups within a state. A government is necessary, but it is a necessary evil, and states always decay through the government confusing its private will with the general will. It needs an almost miraculous conjunction of circumstances to start a state on Rousseau's view, and a continual miracle to keep it together. (A most excellent account of Rousseau's theories.)] **G. Milhaud.** 'Note sur Descartes. Ce que lui rappelait la date du 11 novembre 1620.' [What is D. referring to in his marginal note: "*xi Novembris* 1620, *cœpi intelligere fundamentum Inventi mirabilis?*" M. Milhaud tracks it down to the discovery of the theory of telescopes, inspired by seeing Kepler's optical works in Prague after the battle there on Nov. 8th.] **V. Delbos.** 'L'Art et la Morale.' **L. Rougier.** 'Encore la dégradation de l'énergie; l'entropie s'accrôit-il?' [An attempt to support M. Selme's view that Clausius' theory that entropy tends to increase is mistaken. The author tries to refute Ostwald's proof of Clausius' theorem by using an analogous argument about water dropping from a height, and proving the absurd conclusion that its volume would continually increase. (The analogy breaks down, and with it the attack on Ostwald's proof, in the opinion of the present abstractor.)] **A. Rey.** 'Pour les Étudiants étrangers: a propos d'une licence de Français.' **J. Renauld.** 'L'Oeuvre inachevée de Mario Calderoni.' [Calderoni insisted that the possibility of truth or error only arises when we try to predict, and worked this theory out in detail. He discussed the arbitrary factors in science (very ably, to judge from M. Renauld's synopsis). He defined voluntary actions as those which are varied by beliefs as to their consequences, and argued that a belief in the external world depends on the fact that we can voluntarily vary many of our sensations, but that we have to make definite adjustments to do this. His own task lay in the direction of ethics and economics, and on the death of Vailati with whom he had collaborated, he turned his attention to these subjects. He drew extremely interesting analogies between marginal utility in economics and certain facts in ethics, and showed how this ethical marginal utility combined with general rules in ethics gives rise to a moral analogue to consumer's rent. (Calderoni's work must be well worth studying).] **G. Siméon.** 'Partisans de la force et partisans du droit.' [Shows by examples from con-

flicts about toleration, strikes, and wars that everyone in the end thinks that right may be defended by force and that force is only justified by right. Apparent differences on this point really are differences about what is right. Verbal agreement on this point covers wide differences. The sentiment of rights arises when I am forcibly resisted in doing what I think to be my duty. My recognition of the rights of others is only the recognition that they may be as sincere as I, or the desire to maintain a certain equilibrium by convention between them and me.] 'Nécrologie.' [Jules Lachelier (1834-1918).]

'SCIENTIA' (RIVISTA DI SCIENZA). Series ii. Vol. xxiv. July, 1918. **E. Terradas.** 'Le problème de la figure d'équilibre d'une masse fluide homogène en rotation. Ière Partie: Existence des figures d'équilibre.' **C. Viola.** 'L'analisi strutturale dei cristalli a mezzo delle radiazioni X.' **J. Arthur Thomson.** 'On sexual selection.' **S. Jankelevitch.** 'Les facteurs psychologiques de la révolution russe.' **Ph. Sagnac.** 'Le sens de la guerre mondiale.' Critical note. **G. R. Kaye.** 'L'origine de notre notation numérique.' [Some conclusions reached in articles by the author published in 1907, 1908, and 1911 agree with some of those reached by Carra de Vaux in *Scientia* for April, 1917 (*cf.* 'Philosophical Periodicals' in MIND for April, 1918). These conclusions, reached in wholly different ways by the two writers, are: (1) Proofs of an Indian origin of our notation are, to a great extent, legendary; (2) a confusion between the terms *hindi* (Indian) and *hindasi* (measure, geometrical, etc.) has helped to obscure the discussion; (3) the symbols do not arise from letters as has often been affirmed. As for de Vaux's theory of a secretion of the notation by the neo-Pythagoreans, and its transportation to Persia (and thence to India and Arabia, and its return from Arabia to the West), Kaye quotes from his pamphlet on *Indian Mathematics* (Simla and Calcutta, 1915, pp. 15, 45) that some mathematicians from the Schools of Athens emigrated to Persia in about 532 A.D. because they had heard that there was an ideal form of government under Chosroes I.; and that there are certain other facts which at least justify the hypothesis of the passage by Persia. As for de Vaux's psychological argument, Kaye also has tried to show the invention of our notation is quite foreign to the spirit of Indian culture. The usual idea of an Indian origin, apart from the misread reports of Moslem authors, is founded on such arguments as the use of the notation in very ancient inscriptions and the use of the abacus in ancient times in India. Kaye has shown in detail that both these arguments rest on fallacious grounds. There are other facts which witness against the Indian origin of our notation, as, for example, the different directions of writing in this notation and in Hindu script.] Book Reviews. General Review. **Giuseppe Stefanini.** 'Les progrès récents des études paléogéographiques. IIIème Partie: Études pétrographiques de M. Goldman et nouvelles études de M. Berry.' Review of Reviews. French translations of articles in Italian and English. Series ii. Vol. xxiv. August, 1918. **E. Strömgren.** 'L'origine des comètes.' **E. Terradas.** 'Le problème de la figure d'équilibre d'une masse fluide homogène en rotation. IIème Partie: Stabilité des figures d'équilibre.' **J. A. Lindsay.** 'Les dangers moraux de l'euthanasie.' **V. Giuffrida Ruggeri.** 'Le basi nazionali-etniche in Austria-Ungheria.' **A. Hopkinson.** 'The Blockade.' Book Reviews. Review of Reviews. Chronicle. French Translations of articles in Italian and English.

VIII.—CORRESPONDENCE.

To the Editor of "Mind".

Sir,

Prof. Burnet's review of Mr. P. E. More's *Platonism*, in your last issue, has called my attention to the charge brought against myself as well as Prof. Burnet on pages 11-12 of Mr. More's work. Mr. More, I find, says that we "make a mechanical division between the rationalistic and the mystical elements in the Platonic Dialogues and then relegate all the former to Plato himself and derive all the latter from Socrates". Prof. Burnet has already replied to this charge as far as it concerns himself. For my own part I should be content to let it pass in silence were it not that some writers on philosophy have the unfair habit of treating every accusation which is not explicitly denied as admitted by its victim. This compels me to observe (1) that Mr. More offers no single shred of evidence for the charge, so far as it concerns me, and (2) that it is quite untrue. In *Varia Socratica* I have specified on page x of the Foreword as one of the historical characteristics of Socrates "the stress laid on the *μάθηματα* as a vehicle of spiritual purification". Pages 151-155 are taken up with an attempt to prove the familiarity of Socrates with mathematical science. Page 174 asserts that Socrates "stood from the first in very close relation with the last of his predecessors, the *φυσικοί*," that "he possessed mathematical attainments of an advanced kind," that he formed the centre of a group of men who "were at once students of mathematics and physics, and devotees of a private religion of an ascetic type". On page 266 I have written that Socrates was not merely the "continuator of the religious side of Pythagoreanism" but "its continuator on the more purely speculative side as a searcher after the 'real essences' and 'causes' of the world-order" and that he "was for all mankind the *προμνηστρία* of the *ἱερὸς γάμος* between genuine knowledge and true faith". These sentences, which I have taken almost at random from a work of 270 pages full of matter to the same effect, are enough to show that Mr. More has unconsciously produced a mere caricature of my statements. I feel driven to ask how an author who can in good faith so wholly pervert the plain meaning of a contemporary writing in his own language can be trusted for a moment as an interpreter of books written twenty-three centuries ago in Greek. It may be said that Mr. More has rightly given much more time to ascertaining the meaning of a very great man like Plato than he could be expected to waste on a small man like myself. I allow the reasonableness of the plea, but if he did not think it worth his while to read what I have written carefully enough to avoid such extraordinary misrepresentation, why did he drag my name into his book at all?

Yours, etc.,

A. E. Taylor.